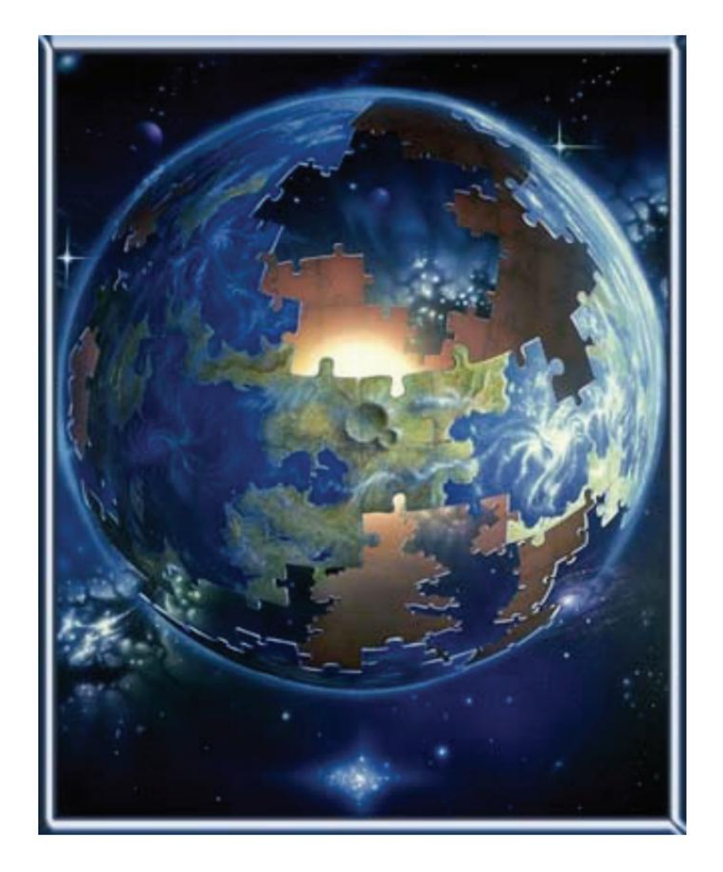
Andrey Sklyarov

Does the fate of Phaeton await the Earth?..

Could our ancient ancestors at the dawn of civilization have known about events that took place hundreds of millions of years ago?.. How close to the truth could their ideas about such a distant past be?.. The answers to these questions are not at all obvious.

Representatives of various scientific schools, trying to prove their superiority in understanding the history of our planet, have been breaking spears in the struggle with each other for almost a hundred years, but do not notice that their dispute was resolved thousands of years ago.

Ancient legends claim that in the distant past the Earth significantly changed its size, and provide us with specific data about the magnitude of these changes. The combination of these myths with the achievements of modern science, no matter how paradoxical it may seem, allows for significant progress in the restoration of ancient events.



A. Sklyarov

"Does the fate of Phaeton await the Earth?..

The knowledge that our ancient ancestors possessed thousands of years ago can sometimes be so amazing in its depth, accuracy and reliability that you involuntarily begin to doubt the prevailing point of view about the rather primitive level of development of society at the dawn of civilization. Consider the knowledge of the ancients, for example, in astronomy, which allowed them to calculate in advance the time of solar and lunar eclipses, the appearance of certain stars and planets above the horizon, etc. One cannot help but admire the accuracy of the ancient Mayan calendar, which surpasses the modern calendar. Or, say, the fact that the basis of the Chinese fortune-telling system for at least five thousand years has been the binary number system, which found practical application in our society only with the advent of computer technology, the work of which is based on the use of this particular system (more details -

see the author's work Mathematical riddles of the Book of Changes). And even the most general conclusions of the ancients about the foundations of our universe are increasingly reflected in purely scientific fields: theoretical physics, cosmology, physics of the microworld...

Even more interesting in this light are the information about our common past, preserved in the legends and traditions of ancient peoples. Thus, descriptions of a certain catastrophe, found in several hundred myths and tales of different peoples, make it possible not only to reconstruct in detail an event more than twelve thousand years ago called the Great Flood and explain a lot of archaeological facts, but also to calculate the causes and mechanisms of this phenomenon on a planetary scale (for more details, see . work of the author The Flood Myth: Calculations and Reality).

Therefore, even grains of ancient knowledge, even if they have reached us in a very distorted mythological form, require very serious attention and careful analysis from the point of view of modern science.

It was this approach that made the author of these lines think about the following story from the heritage of Zoroastrianism. According to the ancient ancestors of the modern inhabitants of Afghanistan and neighboring countries, a long time ago the first man, Yima, ruled the Earth. When the first three hundred winters under Yimu's rule have passed, the supreme god Ahura Mazda warns him that the Earth is becoming too full and people have no place to live. Then Yima, with the help of a certain Spirit of the Earth, makes the Earth stretch out and increase by one third, after which new flocks, herds, and people appear on it. Ahura Mazda warns him again, and Yima, through the same magical power, makes the Earth another third larger. The Nine Hundred Winters expire, and Yima must perform this action a third time.

All this, of course, looks like complete fantasy or a fairy tale, and perhaps would not be worth any attention if... the author, almost by accident, had not stumbled upon the following lines of E. Blavatsky:

After great labors, she [the Earth] threw off her old Three Covers and put on Seven new ones... (Book of Dzyan).

But E. Blavatsky was studying the ancient heritage of the peoples of Tibet and India, and not Zoroastrianism. And at the same time, the ratio 7/3 given to her (seven new covers instead of three old ones) turns out to be extremely close to the value 64/27, which can be obtained as the ratio of the size of the Earth resulting from Yima's actions to its initial size (if we take the description literally, then we are dealing with a geometric progression in which each term of the progression is one third greater than the previous one, i.e. 4/3 4/3 4/3 = 64/27). The difference between 7/3 and 64/27 is only 1/27, i.e. only 1.5% of the stated value!!! But (as is obvious from the text) we are talking about the surface area of the Earth, the main characteristic of which, as a spherical body, is the radius, the difference in which between the two sources is already **less than one percent !!!** Could such a coincidence of the testimonies of two peoples be absolutely accidental?.. This seems very doubtful...

And if this coincidence is not accidental, then could these myths not reflect some real events (albeit in a strongly allegorical form)?.. Was there really such a significant increase in the size of the Earth?..

In order to try to find an answer to this question, we first need to figure out whether our planet can change its size at all. Let's see what modern science says about this...

In fact, almost all possible options for the Earth's past fit into just 4 theories:

a) **the theory of fixism** believes that nothing has changed globally - both the size of the planet and the position of the continents on its surface are constant and unchanged throughout the entire geological history of the Earth;

b) **the theory of plate tectonics** rejects changes in the size of the planet, but allows separation of continents on its surface;

c) **the pulsation theory** considers the formation of stretch zones on the Earth's surface and the folds of its crust as a result of the periodic expansion and contraction of the planet itself;

d) **the theory of expansion** allows for a significant increase in the size of the Earth and explains this reason for the change in the appearance of its surface.

The theory of fixism has not been seriously considered by science for a long time, since it is not able to explain any of the identified data about the past of the Earth on climate, geology, archeology, etc.

The pulsation theory is based on the fact that the Earth is not an absolutely solid and elastic body. Consequently, at least theoretically, a heterogeneous body with liquid insides is capable of experiencing certain pulsations, either increasing or decreasing in size. This theory can explain some geological features (compression and extension structures) on the surface of the planet. However, it completely fails on a number of other issues.

In particular, (like the theory of fixism) the theory of pulsation is completely incapable of explain such almost 100% established facts as:

a) the continents change their position relative to each other and relative to the Earth's poles;

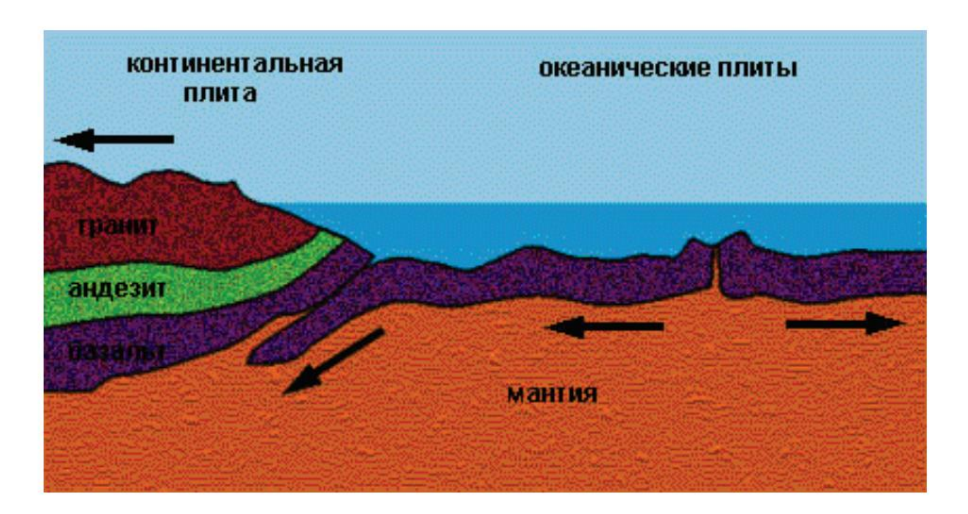
b) the size of the oceans changes;

c) the modern continents once formed a single whole.

Let us note that the theory of pulsation is not interesting to us either, since in the most optimistic estimates of the authors of the theory themselves and its supporters, fluctuations in the size of the Earth do not exceed a few percent. And these percentages are clearly small, both according to paleo data and myths.

So that leaves only two theories: plate tectonics or expansion. One of them allows for a change in the size of the planet, the other categorically rejects it. Who is right? Let's take a closer look...

The theory of plate tectonics is based on the (already established) fact that the outer layer of the Earth - its crust, is not a single monolith, but consists of separate pieces - blocks or plates, under which there is a more mobile, liquid mantle (see ***Fig.*** 1).



\- ***Fig. 1*** -

According to this theory, convective (hot ascending and cold descending) flows in the mantle, the existence of which was previously only assumed in theory, but has now been revealed experimentally, have a direct impact on the crustal plates, forcing the continents (like floating islands) to move along the surface

planets.

Africa, according to many experts, has remained in its place for the last two hundred million years since the existence of the last supercontinent Pangea. Antarctica sailed far south. Australia - to the east. The Atlantic rift, spreading at a rate of one centimeter per year, pushes North and South America to the west, where they encounter powerful resistance from the Pacific Rift, in which the speed of expansion reaches eight centimeters per year (N. Maksimov, Icebreakers of Earth Geology).

The elegance and efficiency of the theory of plate tectonics has led to its rapid development in the last fifty years. She became fashionable and dominant. The overwhelming majority of studies were based on it. It would seem that almost everything with the Earth is clear, but... the success of the theory in explaining a number of events and phenomena of the last several hundred million years has encouraged researchers both to clarify the details of the processes and to reconstruct events of an increasingly distant past. And this is where the absurdities creep in.

The fact is that attempts to restore past events are inevitable are faced with the need to link a lot of data:

a) **in geology:** say, the same composition of rocks of the same age on the margins of different continents, now distant from each other, with a high degree of probability indicates that at the time of the formation of these rocks these margins were in the same place, and the continents formed a single whole (especially if these margins have similar shoreline geometry).

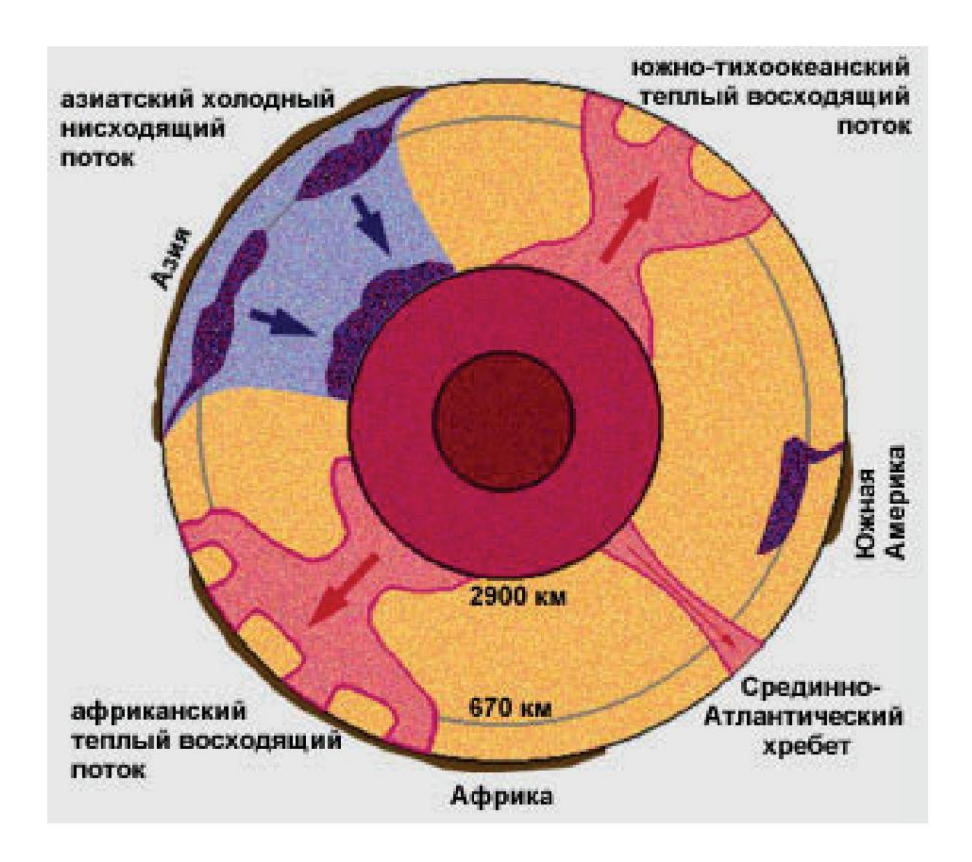
b) **by climate:** both the types of flora and fauna and the nature of geological sediments have a very clear and unambiguous dependence on climate. Therefore, using archaeological and geological data, it is possible to reconstruct the climatic conditions of the past.

c) **according to paleomagnetic data:** it was found that some rocks are capable of retaining their magnetization, which the Earth’s magnetic field generates in them at the time of their formation, and, as it were, remembering their position. Based on the inclination of the vector of this residual magnetization, scientists are now able to determine the geographic latitude at which these rocks were located at the time of their formation.

There is no point in going into details and a complete list of methods and methods of modern research into the Earth's past. The main thing is important: **any error inherent in one or another theory, at a certain stage, inevitably begins to give rise to absurdities and contradictions to established data.** This is exactly what is happening now with the theory of plate tectonics.

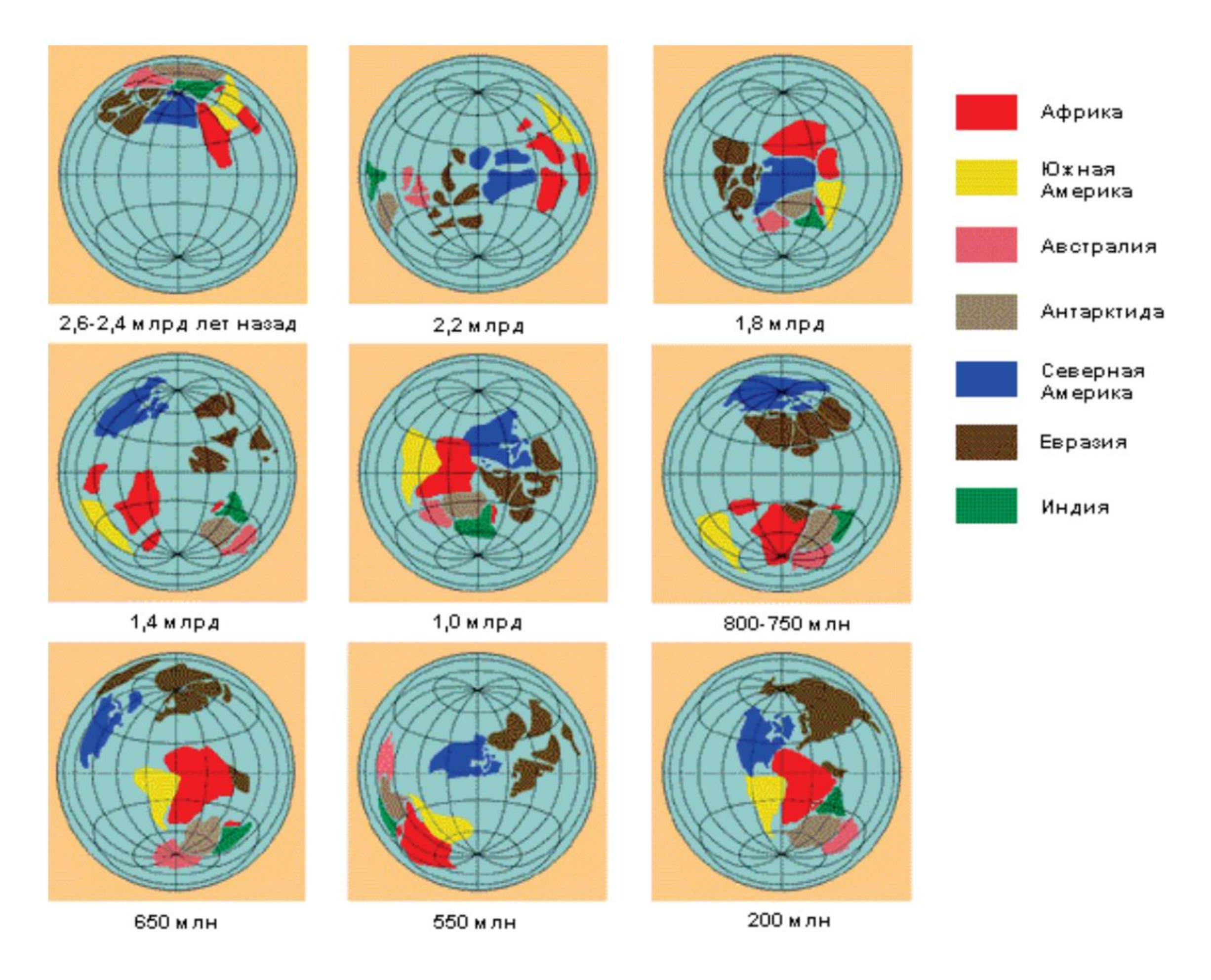
For example, when reconstructing the past not hundreds of millions, but billions of years ago, researchers were forced to come to the conclusion that previously the continents formed a single whole more than once. Over the past 3 billion years, continents have huddled together at least 4 times. To explain this, a certain theoretical model was even built that specifies the periodic gathering of continents into a single super-continent every 800 million years.

But here's the problem (see ***Fig.*** 2): according to this model, it turns out, let's say, that in the Atlantic there should be a powerful upward hot flow in the mantle (as in one of the most active zones of plate separation), but there is just a thin trickle. And moreover: under Africa there should be a cold downdraft, and there is one of the most powerful hot updrafts.



- ***Fig. 2*** -

And the point is not that the model is imperfect (although this is also the case): there is an obvious absurdity in the very picture of the reconstruction of the past obtained on the basis of the theory of plate tectonics. According to this reconstruction (see ***Fig.*** 3 below), it turns out that the continents either scatter, then gather again into a single heap, but for some reason **they absolutely do not change their relative positions:** never once, say, North America was squeezed between South America and Africa or between other continents. And moreover: each time the continents connect, magically turning towards each other in such a way that the protrusion in the outskirts of one continent falls on the notch in the outskirts of the other, and the gaps between them are minimal. Try to honestly stir the dominoes in such a way that (even with a not entirely random movement of your hands) all the dominoes come together, tightly adjacent to each other with even surfaces. It is clear that the probability of such a joining of continents is practically zero.



- ***Fig. 3*** -

The absurdity of the result naturally leads to the conclusion that the used
The theory of plate tectonics simply contradicts the paleo-data.

Analysis of its main provisions reveals even greater absurdity. The fact is that there is one remarkable fact: for absolutely all continental plates the age is about 3 billion years, and for all oceanic plates it does not exceed 200 million years. At the same time, the following relationship was discovered for the oceanic crust: the closer to the mid-ocean fault, the younger the crust. In the area of mid-ocean faults, its age is generally only several million years. As they say: feel the difference! (With the age of the planet itself being 4.5 billion years, we have either very old or very young plates.)

Moreover, oceanic and continental plates differ not only in age, but also in thickness and composition. The thickness of continental plates is 20 - 50 km, and oceanic plates are only 5 - 10 km. Continental plates consist of granite, andesite and basalt layers, which differ significantly from each other in properties and chemical composition (see below); and oceanic plates are made only of basalt. At the same time, the basalts of the continents also differ from the basalts of the oceans in composition.

A lot of questions immediately arise: how was such a difference between the two types of slabs formed in such a miraculous way? Where did the slabs of intermediate age go?..
etc. and so on...

To explain all this, the theory of plate tectonics came up with such a thing as **spreading** and **subduction:** in mid-ocean faults there is an outpouring of magma from the modern mantle (which has already significantly changed its composition compared to what it was 3 billion years ago), and near the continents the oceanic the plate dives under the continental (lighter) plate and is sent to be melted into the mantle, simultaneously, as it were, lifting the edge of the continent and forming, say, mountains such as the Andes on the Pacific coast in South America. This diving is called subduction. Spreading is the movement of oceanic plates from the mid-ocean rift zone to the diving zone.

However, the phenomenon of subduction (and at the same time spreading) itself **has not been proven experimentally and is only a theoretical model** built to explain both the increase in the width of the Atlantic Ocean and the rate of growth of new crust in mid-ocean fault zones. According to this model, we note that almost all the outskirts of the continents should be mountainous uplifts, and this is not observed either along the Atlantic coast or along the edges of the Indian Ocean!!! And even if we assume that in the Pacific Ocean, where such mountain uplifts take place, the older crust was sent to be melted into the mantle, then where did it go from other oceans? At the same time (paradoxically, but true) it is the Pacific Ocean, in terms of the age of the detected crust, that is recognized as the oldest of all existing...

Even proponents of the theory of plate tectonics have to admit that the strongest evidence for it is data on the age of the oceanic crust depending on the distance from the mid-ocean ridge. But it is precisely **this same fact that can equally well confirm the theory of the expansion of the Earth...** This means that spreading and subduction have not been proven at all!!!

Moreover, recently there have been reasons to doubt another basic position of the theory of plate tectonics - continental drift. According to press reports, a compaction of the mantle (the so-called roots of the continents) was discovered under the continents, extending to a depth of 400 - 600 km. And if, according to this theory, continents must move (they simply cannot help but move due to spreading), then no spreading and subduction can explain the movement of the roots of the continents along with them...

But abandoning the theory of plate tectonics (with its life-saving subduction) is fraught with serious consequences, because the fact remains that oceanic crust is growing in mid-ocean faults. This results in a contradiction: the new crust grows, but the old crust does not dive anywhere. And it turns out to be possible to get out of this contradiction only if you abandon such a psychologically comfortable belief as life on a planet of constant size, i.e. if we assume that all the described phenomena occur against the background **of an increase in the size of the Earth.**

The theory of the expansion of the Earth was expressed back in the mid-thirties of XX century, but was relegated to the background for a long time due to the fact that she was able to make only the most vague and evaluative conclusions, which are often different the authors even contradicted each other. In particular, in terms of expansion rates:

...in the Paleozoic, according to this hypothesis, the radius of the Earth was approximately 1.5 - 1.7 times less than the modern one and, therefore, since then the volume of the Earth has increased approximately 3.5 - 5 times (O. Sorokhtin, Expanding Catastrophe Earth).

The most probable ideas seem to me about a relatively moderate scale of expansion of the Earth, in which from the early Archean (that is, over 3.5 billion years) its radius could have increased no more than one and a half to two times, from the late Proterozoic (that is, over 1.6 billion years) - no more than 1.3 - 1.5 times, and from the beginning of the Mesozoic (that is, over the last 0.25 billion years) by no more than 5, maximum 10 percent (E. Milanovsky, Is the Earth expanding? Earth pulsating?).

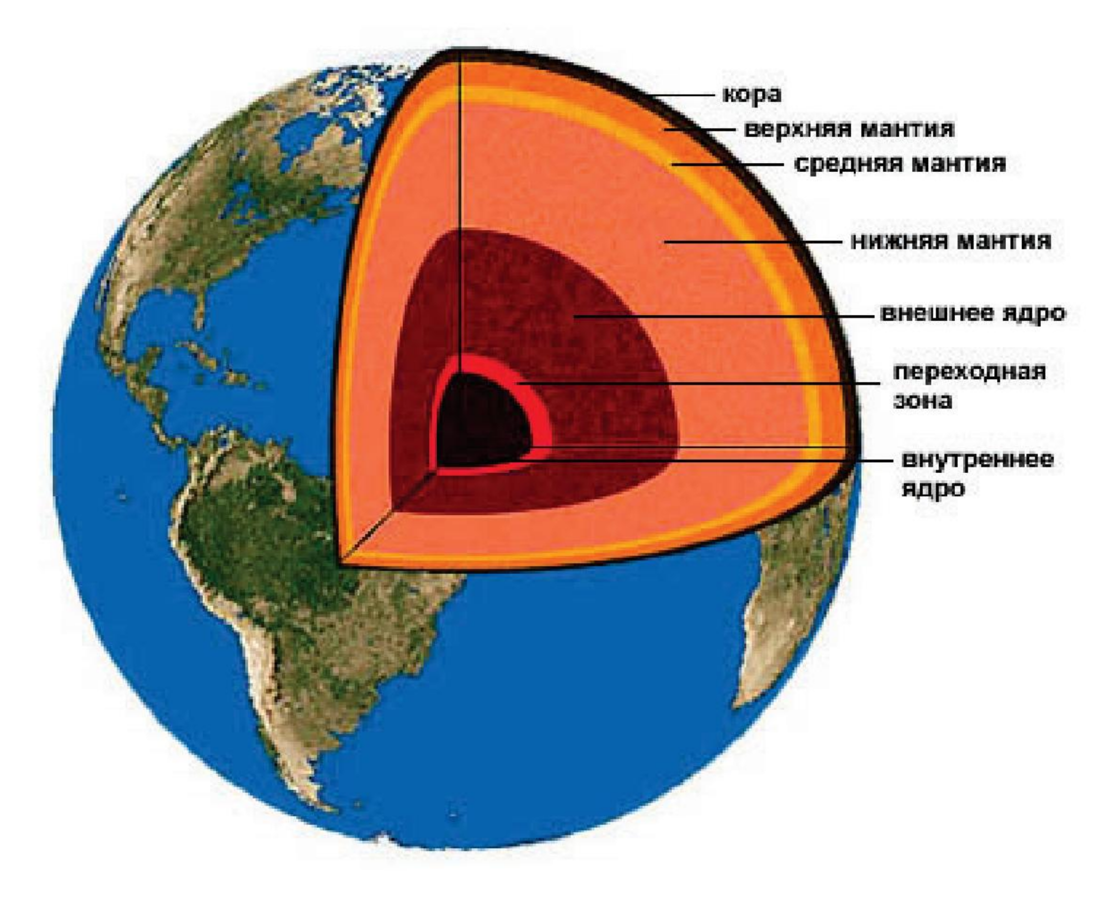
It is clear that such accuracy can hardly be satisfied when there is a convenient An alternative is plate tectonics...

An even more serious drawback of the theory of the expansion of the Earth was the almost complete lack of ideas about its possible causes and the mechanism of the expansion itself. Due to the very general nature of the provisions, this was, in fact, not even a theory, but only a hypothesis on the verge of fantasy.

Global objections from the scientific community were caused by the fact that even a modest decrease in the initial size of the Earth by 15-20% (compared to modern ones) entailed an increase in the average density of the planet several times and led to enormous pressures in its central regions. And for these stronger changes in size, the consequences generally went beyond the reasonable.

Calculations show that when the radius of the Earth is compressed by 1.7 times, the density in its center increases approximately 10 times, reaching 150 grams per cubic centimeter, the pressure increases to 930 million atmospheres (that is, 250 times!), and the temperature rises to several hundreds of thousands of degrees (O. Sorokhtin, Catastrophe of the Expanding Earth).

Such consequences follow directly from the model of the Earth, which has been formed for a long time and is known at least in general terms to everyone from school. (see ***Fig.*** 4)



- ***Fig. 4*** -

According to this model, under a thin layer of solid earth's crust there is a thick mantle, in which (according to the difference in properties) three parts are distinguished: the upper, middle and lower mantle. The Earth's mantle reaches a depth of 2900 km from the surface, occupies more than 80% of the planet's volume and accounts for about 2/3 of its mass. Below the mantle is a liquid outer core extending to a depth of 4900 km; and after a thin transition layer (only 250 km thick), its solid core is located in the center of the Earth.

So here it is. **According to the most popular point of view, the solid core of our planet consists of iron.** Moreover, the known model provides for such a dense packing of iron atoms in the nucleus that compressing it to increase the density several times seems simply impossible. And this puts an insurmountable barrier to the theory of the expansion of the Earth.

A way out of the impasse was proposed by V. Larin, who (as often happens) approached this problem from a completely different angle. The fact is that for the formation of a number of ore deposits of certain metals (iron, gold, uranium, etc.), it is necessary, among other conditions, a significant amount of water, the molecules of which, as is known, consist of hydrogen and oxygen atoms. There is plenty of oxygen in the Earth's mantle (more than 40% by weight), but hydrogen, according to existing models of the chemical composition of the Earth

- it was clearly not enough.

To compensate for this deficiency, some researchers have suggested that ore deposits arose where volcanic lava erupted directly under water. They even went so far as to conclude that there were periods when the entire surface of the planet (with the exception of small islands) was covered with seas. And this clearly contradicted not only the known data, but also the fact that a number of ore deposits were formed where there was obviously no sea!

V. Larin suggested that the missing **hydrogen came from the bowels of the planet** and even built a model of the formation of the Solar system, which made it possible to have significantly more hydrogen in the composition of the Earth's substance than previously thought.

Let us note, **firstly,** that, being **the lightest element,** hydrogen has little effect on the density of the substance in which it is located (say, a hydrogen atom is 56 times lighter than an atom of the same iron). Therefore, the presence of hydrogen in the depths, even in very significant (from the point of view of chemical processes) quantities, has practically no effect on the fairly reliably established distribution of mass and density inside the Earth.

And **secondly,** the assumption about the presence of hydrogen in the composition of the substance of our planet in much larger quantities than previously thought, removes the absolutely absurd contradiction between the fact that **hydrogen is the most common element in the Universe,** and the model of the solar system according to which this hydrogen turned out to be concentrated only on the Sun and the outer planets of the system. (What reasons and mechanisms for blowing hydrogen all the way to the orbit of Jupiter have not been thought of...)

But where exactly in the depths could there be such a storage of hydrogen?.. Why did it not evaporate into the surrounding outer space even in the first stages of the formation of the planet?.. And then V. Larin drew attention to the fact that **hydrogen - extremely reactive element.** It easily interacts with other substances. And what is especially important: **the chemical activity of hydrogen increases sharply with increasing pressure.**

Firstly, hydrogen very readily interacts with most elements, giving hydrogen compounds, and secondly, it can be adsorbed on the surface of particles of condensable substances. For example, if iron condenses in a hydrogen atmosphere, then for each iron atom in the condensate there is one molecule of hydrogen (V. Larin, Earth Seen in a New Way).

Almost all metals are capable of reacting with hydrogen. The interaction proceeds according to the following scheme: adsorption on the surface - dissolution in the volume of the metal (occlusion) - chemical interaction (formation of hydrides). Adsorption and occlusion are purely physical processes: ***adsorption*** *causes the dissociation of hydrogen molecules into atoms; during the process* ***of occlusion ,*** *hydrogen gives up an electron to the conduction zone of the metal and is present in its volume in the form of a proton gas.* ***Metals are capable of dissolving hundreds and even thousands of volumes of hydrogen in one volume...*** *The chemical interaction between hydrogen and metals leads to the formation of qualitatively new compounds -* ***hydrides*** *- with a new type of lattices in which hydrogen has a chemical bond with metals and is present in*

in the form of a hydride ion H- (a proton with two electrons) (V. Larin, Hypothesis of an initially hydride Earth).

But if hydrogen interacts so readily with metals, then why, in fact, should iron be an exception?.. And V. Larin naturally asks the question: who said (and did he prove?) that the Earth's core is purely iron?..

...why does everyone think that the core is iron and the mantle is silicate?.. it turned out that this most fundamental thing ***has never been proven*** *and that* ***the laconic formula the core is iron, the mantle is silicate is nothing more than a speculative assumption...*** *It was discovered in the bowels of the Earth dense and heavy core, and since iron is The only heavy element widely distributed in nature (in addition, there are iron meteorites), it was taken for granted that the core was iron. Further, the beginning of our century is the time of the industrial development of metallurgy and the blast furnace process. Then this was the pinnacle of progress... Therefore, again, an analogy was born by itself: melting once occurred in the Earth, heavy iron flowed down to the center of the planet, and light silicates, like slag in a blast furnace, floated up and formed the mantle. This is where it came from: the core is iron, the mantle is silicate (V. Larin, Earth Seen in a New Way).*

Since the absolute iron content of the core has not been proven at all, **the hypothesis is quite acceptable that the internal structure of the Earth is completely different: it is full of hydrogen, which in the solid core is found in the composition of hydrides, and in the liquid outer core - as a solution in the metal** (even if same gland). Could this be?.. It turns out - easily...

First of all, the dissolution of hydrogen in a metal is not simply mixing it with metal atoms: in this case, hydrogen gives up its electron, which it has only one, to the common treasury of the solution, and remains an absolutely naked proton. And the dimensions of a proton are 100 thousand times (!) smaller than the dimensions of any atom, which ultimately (together with the enormous concentration of charge and mass of the proton) allows it to even penetrate deep into the electron shell of atoms. This ability of the naked proton has already been proven experimentally.

But penetrating inside another atom, a proton seems to increase the charge of the nucleus of this atom, increasing the attraction of electrons to it and thus reducing the size of the atom. Therefore, the dissolution of hydrogen in a metal, no matter how paradoxical it may seem, can lead not to the looseness of such a solution, but, on the contrary, to **compaction of the original metal.** Under normal conditions this effect is insignificant, but at high pressure and temperature it is quite significant.

Thus, the assumption that the outer liquid core of the Earth contains a significant amount of hydrogen, **firstly,** does not contradict its chemical properties; **secondly,** it already solves the problem of deep hydrogen storage for ore deposits; and **thirdly,** which is more important for us, **it allows for significant compaction of the substance without an equally significant increase in pressure in it.**

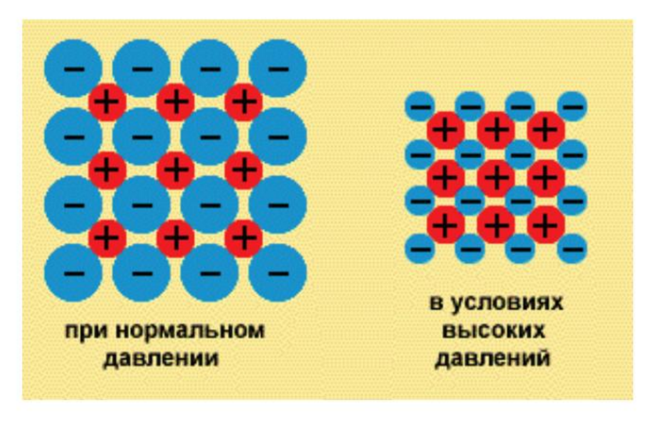
But it turns out that all these are seeds... In metal hydrides we have a different picture: it is not hydrogen that gives up its electron (to the general rather loose electron piggy bank), but the metal gets rid of its outer electron shell, forming

called ionic bonding with hydrogen. And the radius of a metal atom ion (that is, an atom without its outer electron shell) is on average 2 times less than the radius of the atom itself. This, on the one hand, allows hydrides to accommodate enormous amounts of hydrogen.

...for example, one cubic centimeter of magnesium hydride contains one and a half times more hydrogen by weight than is contained in a cubic centimeter of liquid hydrogen, and seven times more than in a gas compressed to one hundred and fifty atmospheres! (M. Kuryachaya, Hydrides that did not exist).

At Moscow University they created a cylinder based on... an intermetallic compound [an alloy of lanthanum and nickel]. Turn the tap and a thousand liters of hydrogen are released from a liter cylinder! (ibid.).

On the other hand, such a decrease in the size of metal ions **allows them to be compacted in the hydride form under ultra-high pressure conditions, even up to an eightfold (!) value.** (see ***Fig.*** 5). Moreover, this ability to hyper-densify the packing of hydride particles is experimentally detected even at ordinary atmospheric pressure.



- ***Fig. 5*** -

Density, g/cm	LiH	Now	KH	RbH	CsH CaH2		SrH2	BaH2
Metal	0,534	0,971	0,862	1,532	1,903	1,55	2,60	3,50
Hydride	0,816	1,396	1,43	2,59	3,42	1,90	3,26	4,21
Compaction, % 52.8		43,8	65,8	69,2	80,0	22,6	25,4	22,9

Thus, the hypothesis that the solid inner core of the Earth consists not of pure iron, but of hydrides, also does not contradict the chemical properties of hydrogen and metals. But, compared to a liquid solution of hydrogen in the outer core, in this case we are dealing with a more efficient storage of hydrogen, **a record holder for compressibility (i.e. for an increase in density without a significant change in pressure).** so with

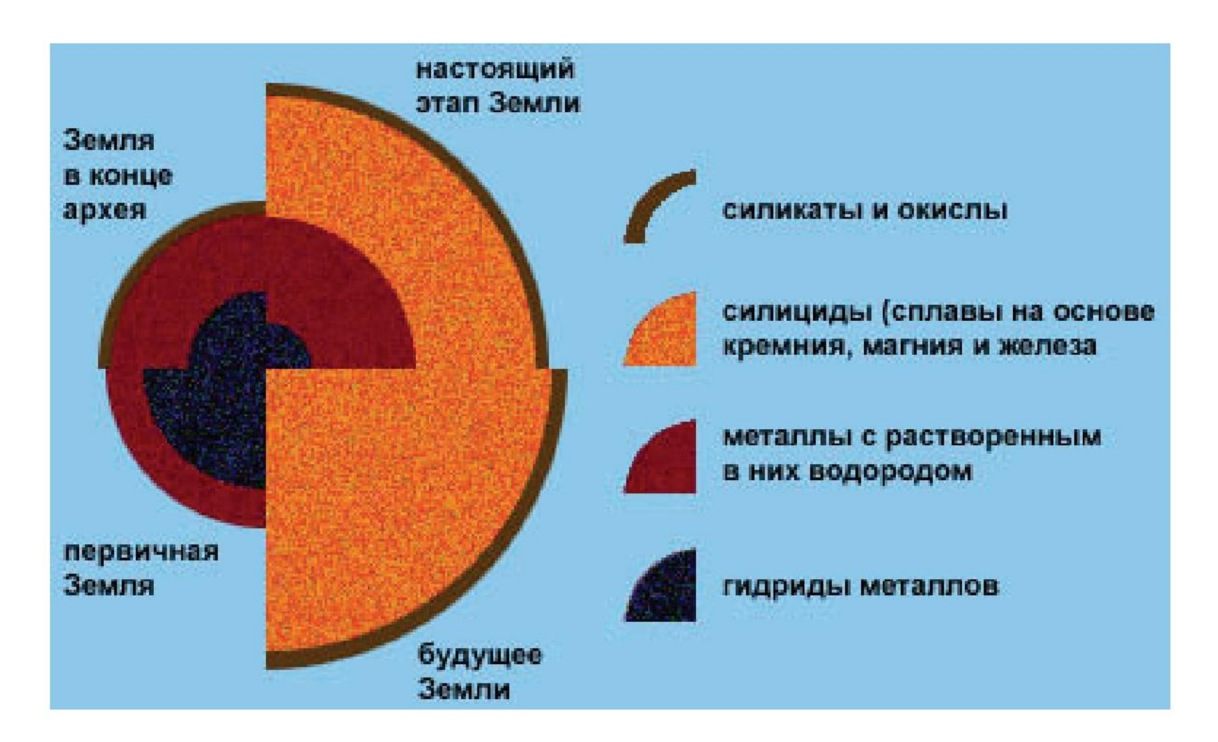
Translating all of the above into Russian, we can say that V. Larin proposed such a scheme for the structure of the Earth, in which the main obstacle to the theory of expansion is removed: the appearance in the calculations of enormous pressures for the interior of the Earth.

Note that a decrease in the size of the Earth within the limits of the previously given estimates (1.5 - 1.7 times) requires an increase in the density of matter by only 4 - 5 times, which turns out to be quite acceptable for hydrides (remember: estimates of their possible compaction gave the figure 8!).

And one last thing. Just as you can pump the subsoil with hydrogen, you can also release it from there.... Let's say, an increase in temperature (all other things being equal) causes its release (degassation) both from the solution in the metal and from the hydride. At the same time, **reaching a certain threshold temperature can cause an abrupt multiple increase in the rate of hydrogen evolution from hydrides:** extreme temperatures cause their rapid decomposition. But hydrides are more densely packed than just metal. That's why

The main geological and tectonic consequence of the hypothesis of an initially hydrid Earth is a significant, possibly multiple ***increase in its volume over the course of geological history,*** *which is due to the inevitable decompression of the planet's interior during the degassing of hydrogen and the transition of hydrides into metals (V. Larin, Hypothesis of an initially hydrid Earth).*

So, V. Larin proposed a theory that not only solves some problems of ore deposits and explains a number of processes in the history of the Earth (to which we will return), but also provides serious ground for the hypothesis of the expansion of our planet (see ***Fig.*** 6) - as side effect.



- ***Fig. 6*** -

However, the theory of the hydrid Earth was never able to overcome the evaluation stage and quite reliably specify the size of the expansion of the planet. In addition, this theory assumes both the continuous evaporation of hydrogen from the hydride core and **the continuous expansion of the Earth** throughout almost its entire history.

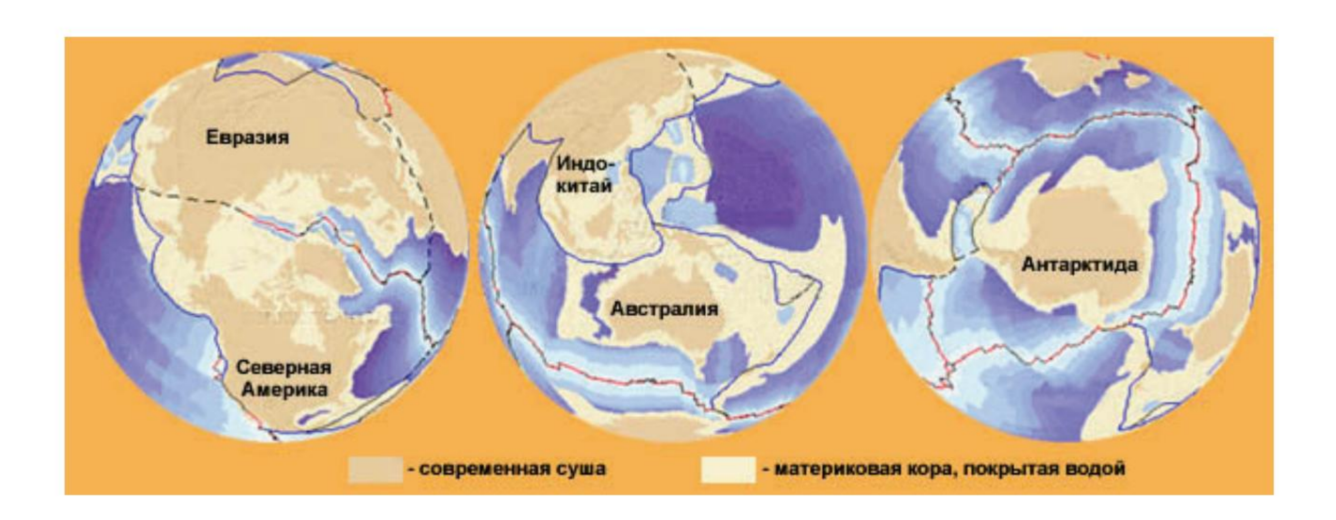
And mythology, which now has the opportunity to rely on modern scientific knowledge, gives a very definite meaning of the increase in the size of our planet, but only at a certain stage of its history. At the same time, the mythological ratio is quite consistent with the estimates of other authors regarding expansion (in order of magnitude). So, maybe the myths don't lie when it comes to specific numbers?.. Let's now consider this possibility...

The first thing that catches your eye is that the ratio of the total surface of the planet to, The area of modern land is close to the mythological ratio and exceeds it. although seriously Therefore, the first desire arises - to try to combine the continents into a single whole as the old crust of the Earth before expansion. Moreover, the very geometry of the continents seems to hint at such a possibility.

Actually, the idea of combining continents into a single whole is not new. And it was precisely the geometric correspondence of the outlines of a number of continents to each other that was the basis of this idea, from which the theory of plate tectonics originated. But these were all attempts to combine continents on a planet of modern size. Here the task is different: it is necessary to dock the continents on a smaller ball.

However, it should be taken into account that the modern outlines of the continents are determined by the level of the World Ocean, which, in fact, is not directly related to the problem of expansion (only, at best, indirectly - as discussed below). And here the fact of the difference between oceanic and continental plates comes to the fore. The only difference between a continent and a continental plate is that part of the continental plate is covered by the waters of the World Ocean. And although most of the continental plate protrudes above the surface of the water, the submerged parts of the plates make up a quite noticeable addition. This addition turns out to be very significant and brings us significantly closer to the cherished mythological ratio.

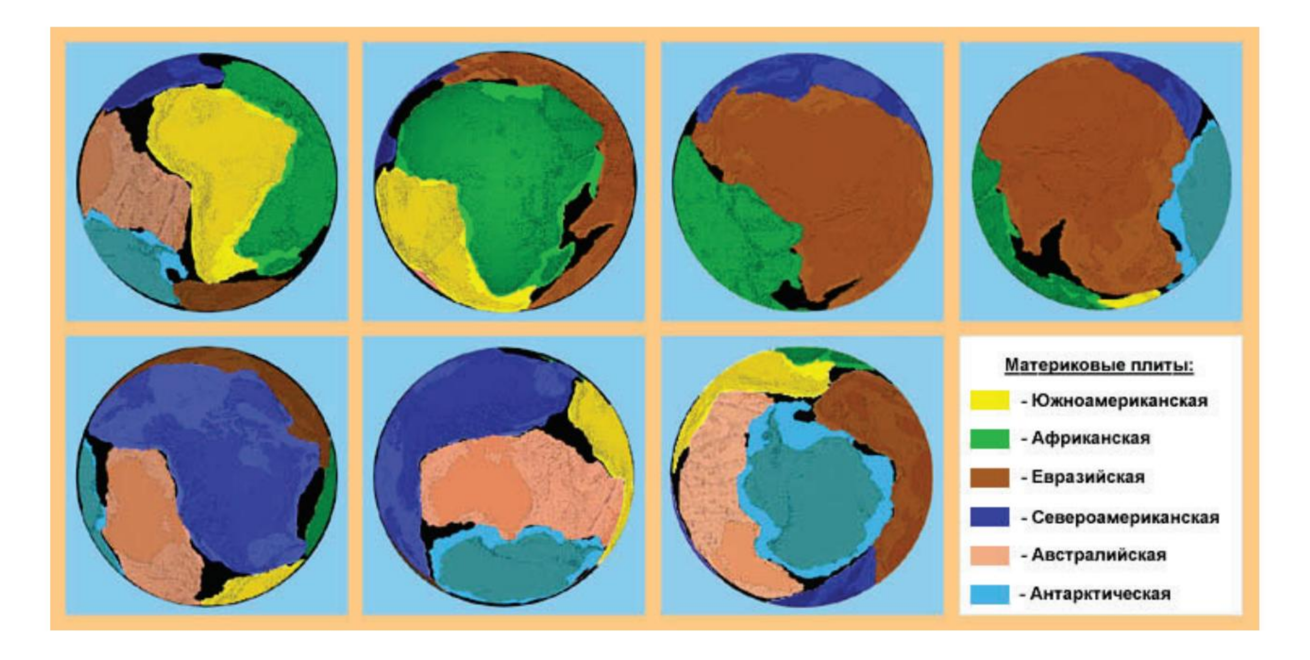
In addition, taking into account the underwater part noticeably changes the outlines of the stitched pieces (see ***Fig. 7).*** This has a particularly significant effect on the northern edges of Eurasia and North America, as well as on the configuration of Antarctica and Australia (the latter generally has a plate size that is 2 times the size of the continent itself). And separately, attention should be paid to the significant area of the Eurasian plate in the area of its Indochina outgrowth, which is usually simply neglected in various reconstructions of the movement of continents, although its size is many times greater than the size of the Hindustan Peninsula, which appears in all available reconstructions of moving continents.



So, the author took the risk of testing the obvious hypothesis and sewing continental plates (their outlines and sizes were taken from the Encarta Virtual Globe 1998 Edition program) on Earth, **reduced by the average mythological ratio** (by radius: R0 = 0.652R modern). That is, it was assumed, based on myths, that the Earth, in the process of its expansion, increased by 1.53 times.

Since the task went beyond simple geographic maps, modeling was carried out in three dimensions using the 3D Studio MAX 3.0 program. in such a way as to **ensure minimal deviation from the modern relative position of continental plates.** At the same time, priority was given to those that literally caught the eye: North America is ideally connected with Eurasia along the Arctic margins, Africa with Europe along the Mediterranean, Africa with connections South America along the Atlantic coast, and the Antarctic plate with the Australian plate according to the relative position of the plates relative to the modern geographic longitude The result was a three-dimensional model of the unexpanded Earth that exceeded all expectations.

The result of stitching is shown in ***Fig.*** 8, where, for convenience, each continent was photographed on a three-dimensional model. As you can see, **the continental plates fit perfectly together on a planet of size determined by the mythological ratio !!!** True, for such stitching it was necessary to bend the Indochinese process only slightly (at an angle not exceeding 10 degrees) (an explanation for this will be given a little later).



- ***Fig. 8*** -

The position of Antarctica and Australia was somewhat unexpected: the Australian plate was well aligned with... North America. And Antarctica, in contrast to the available options for the reconstruction of a single Gondwana (a supercontinent of southern continents in the past - 300 - 400 million years ago), turned out to be separated from Africa and India by the Indochina spur. (Looking ahead, we note that the obtained position of Australia and Antarctica does not at all contradict the factual data on which the Gondwanaland reconstructions are based).

So, **the myths turned out to be able to provide that very specific figure that the theory of the expansion of the Earth was so lacking in order to present the past appearance of our planet !**

But the reader, of course, can say: these are just games with geometry - and nothing more... Therefore, the author decided to analyze this problem from the other side...

The following logical chain was also worked out. There is a fact of a sharp difference between the oceanic crust and the continental crust (including in age). Continental plates are well stitched on the surface of the small Earth. Therefore, it is quite possible that **oceanic plates are that part of the crust that is built up by the Earth during its expansion.** Then it makes sense to try to calculate the entire process of growth of the Earth's surface over time (especially since the tectonic maps of the Encarta program Virtual Globe 1998 Edition provided this opportunity due to the availability of data on the age of various zones of the oceanic crust). This was realized by bluntly measuring the areas of oceanic plates of different ages with a ruler. In this case, the author neglected the subduction option (remember: which has not been proven at all) for the sake of simplicity.

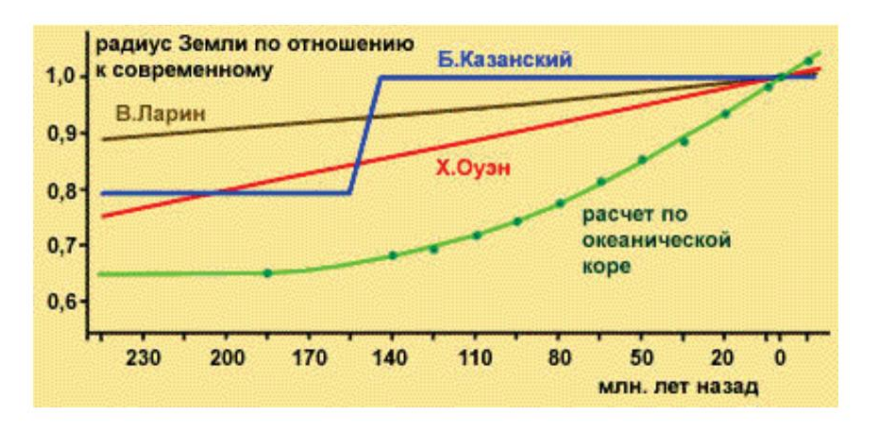
The results again exceeded all possible expectations. Not only that, the calculations (within the available errors) gave the same mythological ratio as the size of the unexpanded Earth. The calculated points (for all the clumsiness of the calculation method) fit perfectly onto a single curve (see ***Fig.*** 9). Even if we take into account all the inaccuracy of the calculations, due, in particular, to the possible inaccuracy of maps due to insufficient knowledge of certain zones of the oceanic crust, such a result cannot be accidental.



However, the nature of the expansion process in time turned out to be very far from a one-time event (as in E. Blavatsky), as well as from the three-fold action of Yima. The increase in the Earth's surface area, as can be seen from this figure, occurred continuously and quite quickly reached a curve close to the exponential **S = exp(0.006 T),** where **S** is the Earth's surface area in relation to the modern value, and **T** is time in millions of years back from the present moment (therefore has a negative meaning!).

Now, if you try to approximate the exponential by a three-step increase by 1/3 at each step (huge thanks to the author's beloved wife for the idea!!!), it turns out that the **mythological version** (with equal time intervals between expansion acts) **differs so little from the optimal mathematical one approximations** that are on the verge of fantasy! Just try to imagine the genius of the task that faced our ancestors: using **the simplest numbers and methods to describe such a complex process as an exponential change!!!**

(We also note in parentheses that V. Larin also obtained an exponential dependence, only his exponential, according to estimated calculations, turned out to be flatter - see ***Fig.*** 10).

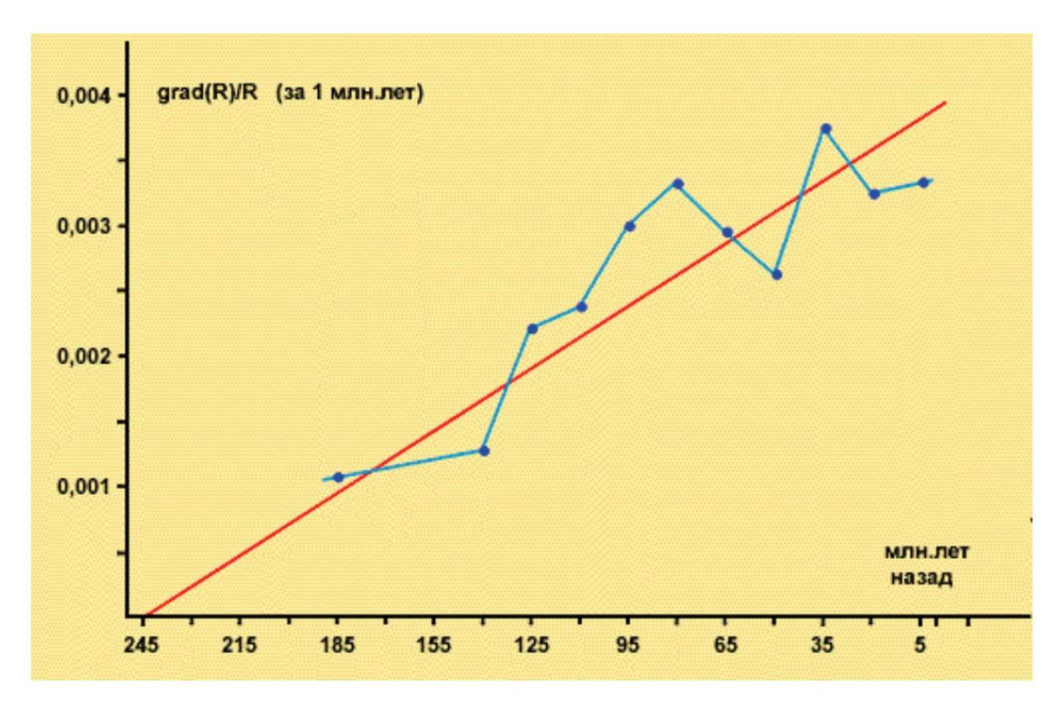


*- **Fig. 10** -*

A remarkable result is that **the expansion of the Earth continues to this day (and so far at an ever-accelerating pace).** According to the obtained dependence, the rate of increase in the radius of the Earth at the present stage is about 2 centimeters per year. This gives an increase in the length of the equator by about 12 centimeters per year, which, in principle, can be observed, as they say, with your own eyes. Let us recall: according to the estimates of supporters of the theory of plate tectonics, the Atlantic Rift pushes the continents of the western and eastern hemispheres apart by 1 cm per year, and in the Pacific Rift the rate of separation reaches 8 cm per year, i.e. (taking into account the fact that at the equator the increase in linear dimensions is maximum) we obtain almost complete agreement between calculations and experimental data.

It is also important that in this case there was no need to come up with any additional effects such as plates diving under each other (i.e. subduction). In passing, we note that if subduction had taken place, then (due to the fact that it should have had a rather random nature) points on the graph corresponding to an age of the oceanic crust of more than about 50 million years should have noticeable deviations from a single curve. However, this is clearly not observed...

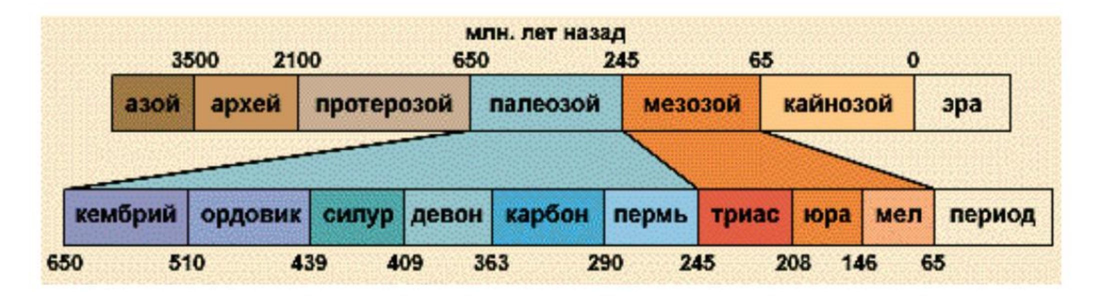
From the data presented, one can also determine the rate of change in the size of the Earth not only at the current time, but also in the past. Since the main part of the graph is close to exponential, the maximum interest is not the absolute expansion rate, but relative to the current size of the planet. The corresponding graph is shown in ***Fig. eleven.***



- *Fig. 11* -

The approximation straight line on the indicated graph corresponds quite well to the calculated points. This straight line is important for two reasons: firstly, the straight line on this graph corresponds to the exponential dependence of size on time; and secondly, it indicates the start time of the expansion process!!!

It is interesting that although the oceanic crust on which the calculations were made has an age of no more than 200 million years, the velocity graph indicates **the time when the expansion process began at 245 million years ago.** This moment in time turns out to be extremely rich in the most important events from the point of view of paleontology and geology. (Figure ***12*** shows a time scale that the reader may need for reference.)



- *Fig. 12* -

Firstly, it was at this time that what is sometimes called **the Permian-Triassic massacre occurred.**

It turns out that not only mammals (including us) became masters of the planet thanks to the extermination of dinosaurs, but the dinosaurs themselves reigned on the planet thanks to the mass extermination of living species that preceded them. At this point, which is located exactly on the border between the Permian and Triassic periods, biological life on Earth... underwent a monstrously catastrophic

thinning: within a matter of millions of years, ***almost eighty percent of all inhabitants of the seas and oceans and almost seventy percent of all vertebrates disappeared!*** *(N. Rudelman, Tour of disasters).*

Secondly, at the same time the so-called **Illavar magnetic anomaly was noted,** which is characterized by literally **leapfrog with magnetic poles** (see ***Fig.*** 13). The Earth's magnetic field changed its direction many times, not staying in one place for more than 300 - 400 thousand years (the time is insignificant from the point of view of geology).



*- **Fig. 13** -*

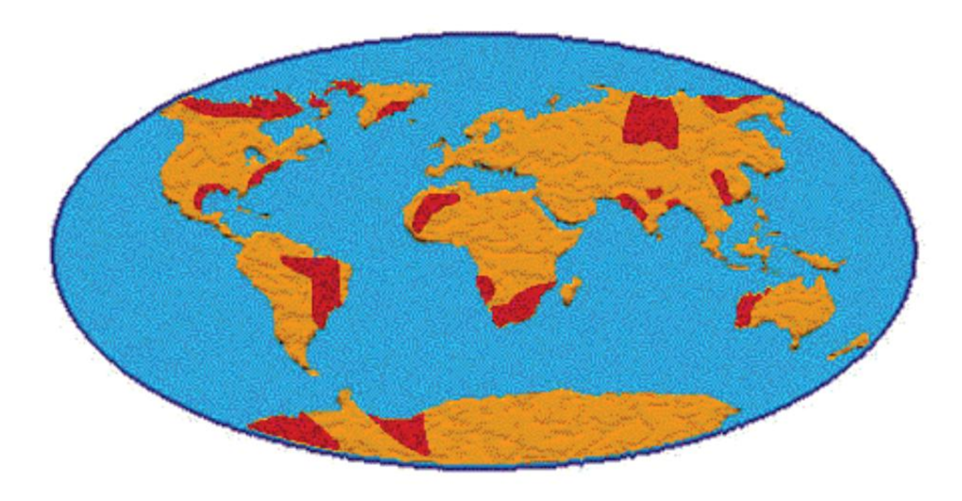
Thirdly, during this period there is **a powerful intensification of tectonic and volcanic activity,** which for us is most interesting **due to the appearance of a new phenomenon - traps.** Traps are the consequences of a powerful outpouring of basaltic lava over vast areas.

Each trap area covers an area of up to 1 million km2 or more. During the era of magmatism, flaming streams of hot melt spread across these vast areas over the earth's surface. Stream after stream they accumulated... and created lava cloaks... In trap provinces, a lava cloak with an average thickness of 500 - 1500 m is usually common. In certain zones... the lava cloak has especially large thicknesses (up to 3 km in Siberia in Prienisei strip, up to 3.5 km in the west of Hindustan, up to 8 or more km in the east of South Africa) G. Makarenko,

Planetary mountain arcs and myths of mobilism).

Not only do the traps differ sharply from previous rocks in a different chemical composition, they also have a unique geological structure, which indicates the supply of lava material *from* ***small, monotonous, but very numerous*** *explosive devices that operated* ***for a short time or in a single event*** *(ibid.).* This process of formation of traps differs sharply from the usual volcanic eruptions in modern geologically active zones of the Earth.

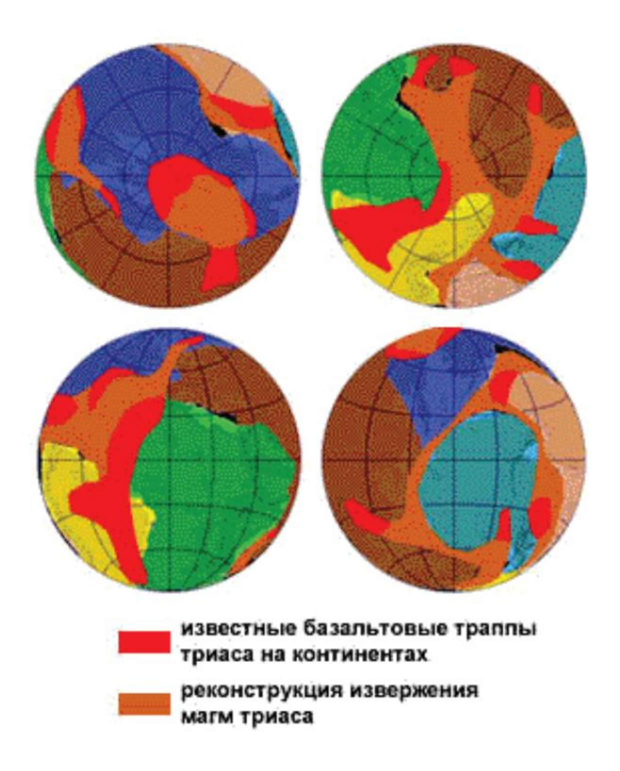
The thickness of the lava gradually decreases towards the edge of the trap province, so that if you look at the thickness of the lavas in section, it represents, as it were, half a lens. In this regard, the geography of the traps is interesting (see ***Fig. 14).***



- ***Fig. 14*** -

But this is on modern Earth, and if you apply them to a model of a small Earth, then the traces of the outpouring of traps amazingly coincide with the places of splits of the old (continental) crust at the initial stage of the Earth's expansion. If we connect the traps on the continents with each other (which simply suggests itself), then we get almost **a single network of cracks through which powerful volcanic flows poured out during the Triassic period** (see ***Fig.*** 15), and **along which the old crust subsequently split,** determined the modern outlines of continental

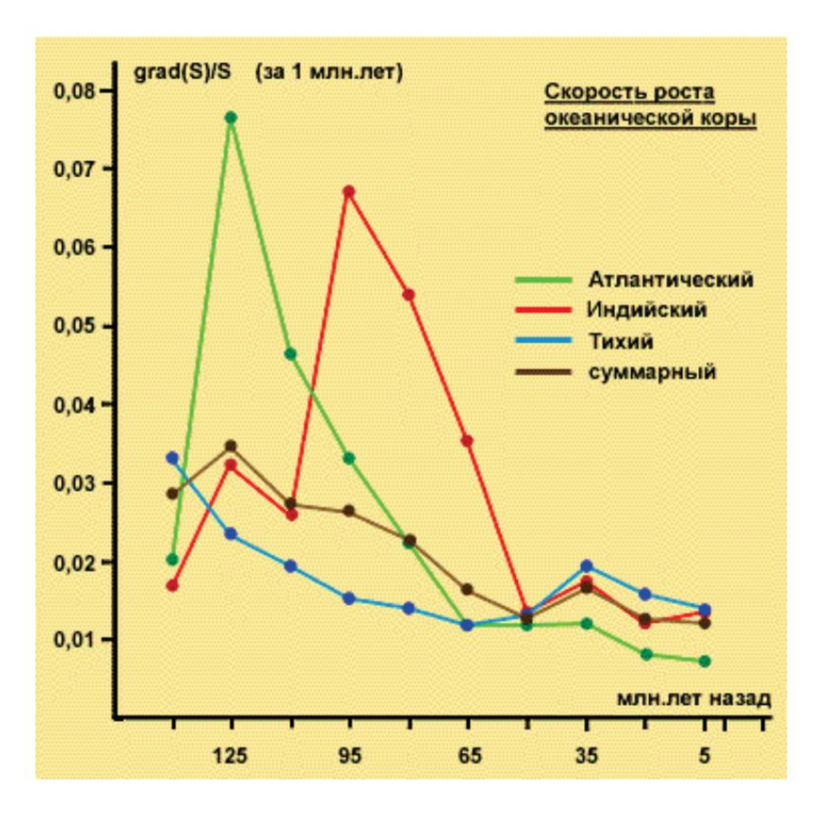
slabs



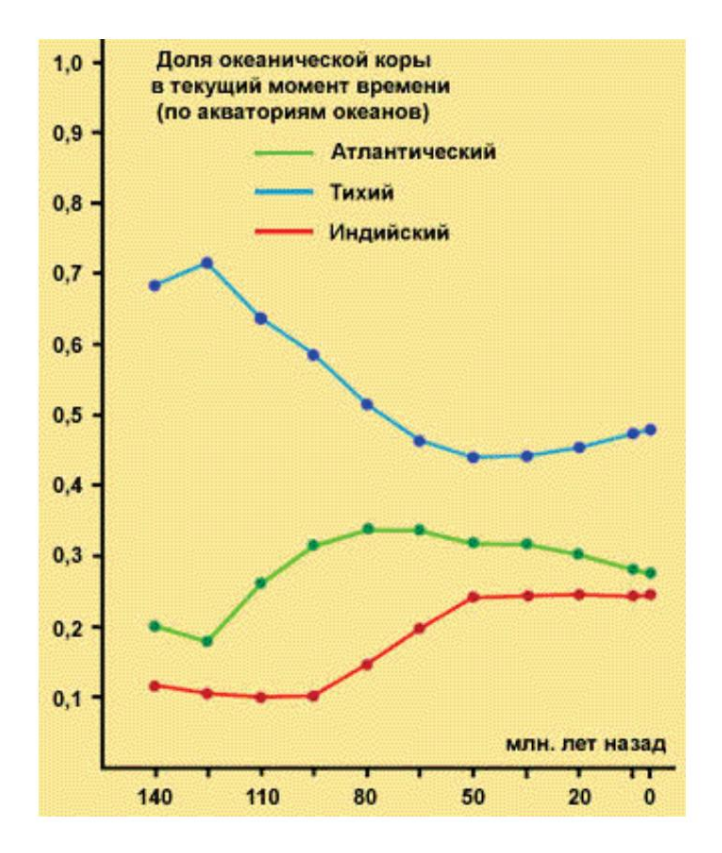
- ***Fig. 15*** -

But let's return to the calculations on the growth of the oceanic crust... As a by-product, it turned out to be possible to obtain the rates of this growth for the water areas of individual oceans (the oceanic crust of the Arctic Ocean in view

its insignificant area compared to the ocean itself is docked to the Atlantic; especially since this is essentially a single fault in the old crust). The results for the reduced rate of growth of the oceanic crust and the relative share of the oceans in the total mass of the oceanic crust are presented in ***Fig. 16*** and ***Fig. 17.***



- ***Fig. 16*** –



- ***Fig. 17*** -

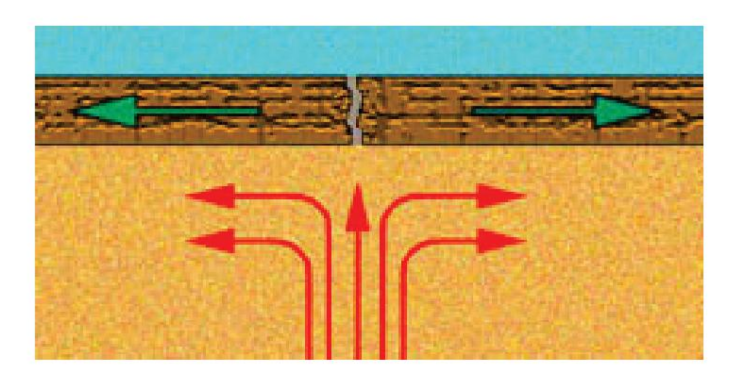
As you can see, the results obtained coincide with the established fact of different ages of the oceans: **first, the Pacific Ocean formed most intensively, then - Atlantic, and last but not least, Indian.** And the conclusion that the expansion of the Earth is still ongoing coincides with the fact of the formation of traps, which continues to this day in the youngest coastal areas of South Australia and the Antarctic ancient platform with the Indian Ocean.

It is precisely this sequence of ocean formation that corresponds very well to the scenario in which expansion had to occur in order to obtain the modern arrangement of continents from the simulated small Earth. Thanks to the initial development of the process from the Pacific Ocean, Australia and Antarctica not only separate from the Americas, but also begin to move south, making room for the Indochinese process, which subsequently takes its current place thanks to the intensification of expansion processes in the Indian Ocean.

The expansion scenario itself deserves more detailed analysis, but First we need to dwell on the mechanics of the process.

The release of hydrogen from the hydride interior of the planet, as follows from V. Larin's theory, is not an absolutely uniform and geometrically symmetrical process. Evaporating hydrogen and the light products of its interaction with mantle matter are forced into certain channels, which we actually observe in the form of hot ascending convection currents in the mantle. To date, several powerful such flows have been discovered, generating a series of **hot spots** on the Earth's surface .

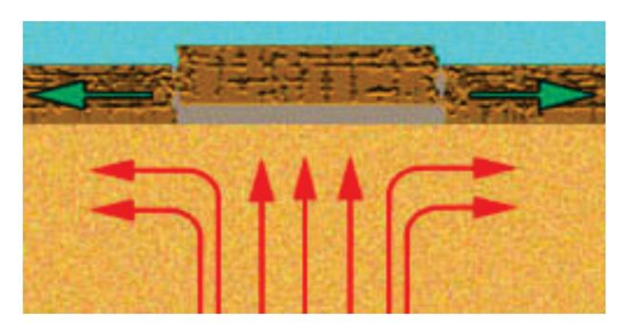
So, the position of these points is also quite consistent with the simulated expansion scenario. For example, the updraft in the Azores region ensured the pushing of North America and Europe and the formation of the North Atlantic. Finding himself under the weak point of the old crust, he tore it apart and pushed its fragments apart - the continents. (See ***Fig.*** 18).



In a similar way, the updraft now located in the area of the Hawaiian Islands caused a split along the line connecting the Australian plate with North America, and caused the movement of Australia and Antarctica in a southerly direction, and shifted the region of the Far East and Alaska towards the North Pole.

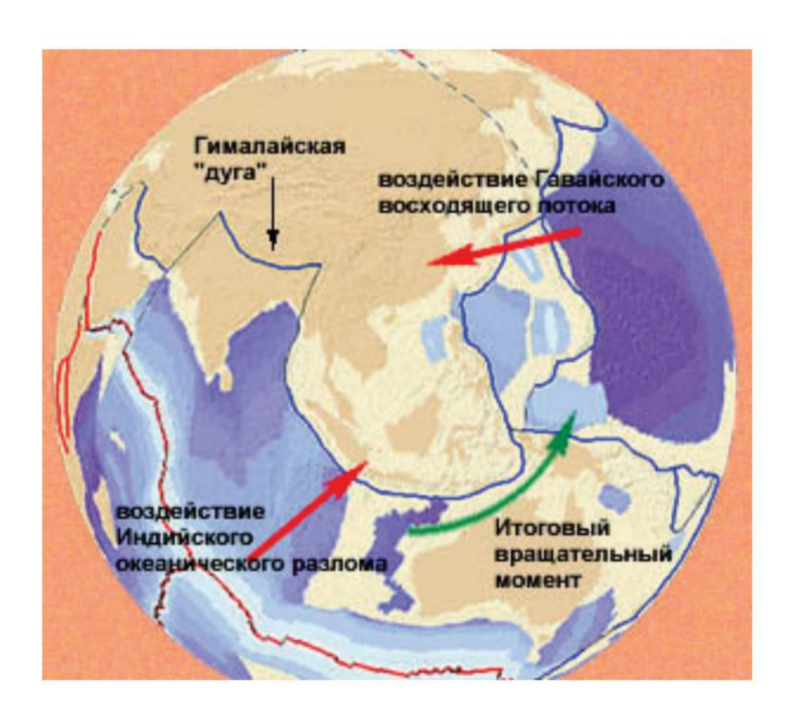
A powerful hot updraft in the South Pacific Ocean ensured the departure of the Australian and Antarctic plates (which initially formed a single whole and split later) in a westerly direction from the Americas.

This was not the case with another strong, hot updraft under Africa (see ***Figure*** 19). This flow did not split present-day Africa itself, but raised it (this rise is still recorded today: it is 500 meters above the average level of the continents). The western edge of this ascending flow eventually broke off (somewhat later than other flows) South America from Africa, although the further advance of South America to the west from Africa was determined by a different mechanism: due to the general expansion of the planet and the outpouring of magma from the upper mantle in the Mid-Atlantic region fault. The eastern edge of the ascending African current, now extending beyond the continent, broke off and drove India and Indochina away from Africa, the further displacement of which was similar to the movement of South America (thanks to the mid-ocean faults of the Indian Ocean). Residual traces of the impact of said updraft can be seen in the form of the breakaway island of Madagascar and the Arabian Peninsula.

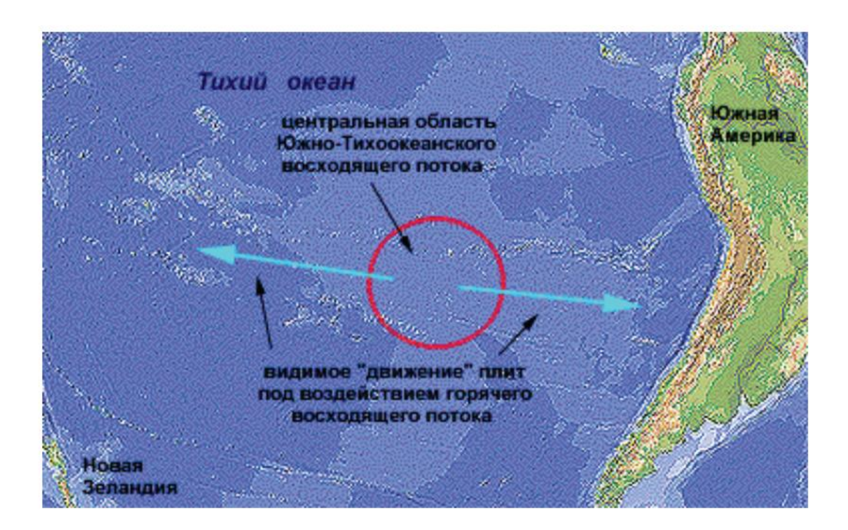


- ***Fig. 19*** -

It should also be noted that the inclined position of the mid-ocean fault in the Indian Ocean and the presence of the rising Hawaiian flow determined a somewhat specific movement of the Indochinese branch of the Eurasian plate, which, in addition to the displacement to the east from Africa, was accompanied by a **counterclockwise rotational movement.** (It was previously mentioned that in order to join the continents on the small Earth, it was necessary to slightly bend the Indochinese branch towards Africa.) The general distribution of the acting forces in this case, quite possibly, ensured the curved shape of the Himalayan massif (see ***Fig.*** 20).

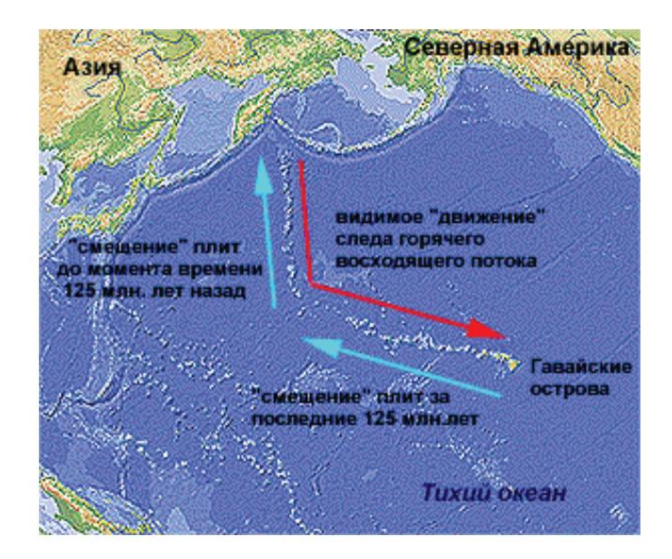


And a little more about hot rising currents... They are capable of not only lifting the Earth's crust, but also burning it (even if its thickness is not very large) above them, forming, as the crust moves, a trace **in the form of a series of volcanoes.** And although such traces of movement seem to play into the hands of supporters of the theory of plate tectonics, it is clear that such traces will remain during expansion, creating and in fact fixing the direction of the growth of new crust. This is clearly seen in the example of chains of underwater volcanoes diverging visibility of movement . in different directions from the South Pacific hot updraft, see ***Fig.*** 21).



The direction of these submarine volcanic chains is well explained by the fact that Australia eventually found itself under the Indochinese ridge, where it was driven by the South Pacific updraft.

But the trace from the Hawaiian updraft (see ***Fig.*** 22), which first managed to drive Australia and Antarctica far to the south, before the expansion of the Pacific Ocean acquired a direction almost parallel to the equator, corresponds even better to the scenario we obtained for the expansion of the planet. Note that the time of rotation of the Hawaiian trace (about 125 million years ago - according to the age of the crust) immediately precedes the intensification of the expansion of the Indian Ocean, which reached its peak about 100 million years ago and drove the Indochinese process far to the east from Africa.



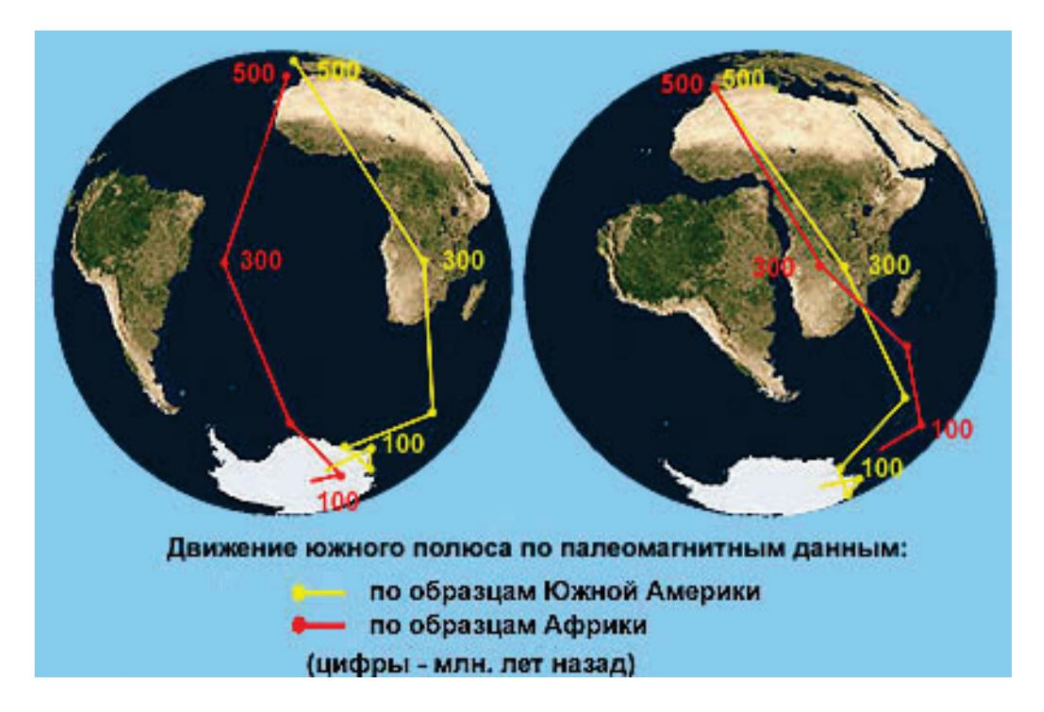
- ***Fig. 22*** -

So, **the constructed model of the small Earth reveals a clear logical connection with the modern position of the continents and hot ascending mantle flows, as well as with the orientation of mid-ocean faults and the trajectory**
traces of rising currents.

But, as we have already mentioned, attempts to restore the past inevitably face the need to verify a multitude of accumulated data, including information about ancient climate and paleomagnetic indicators. Naturally, such a check needs to be done for the small Earth.

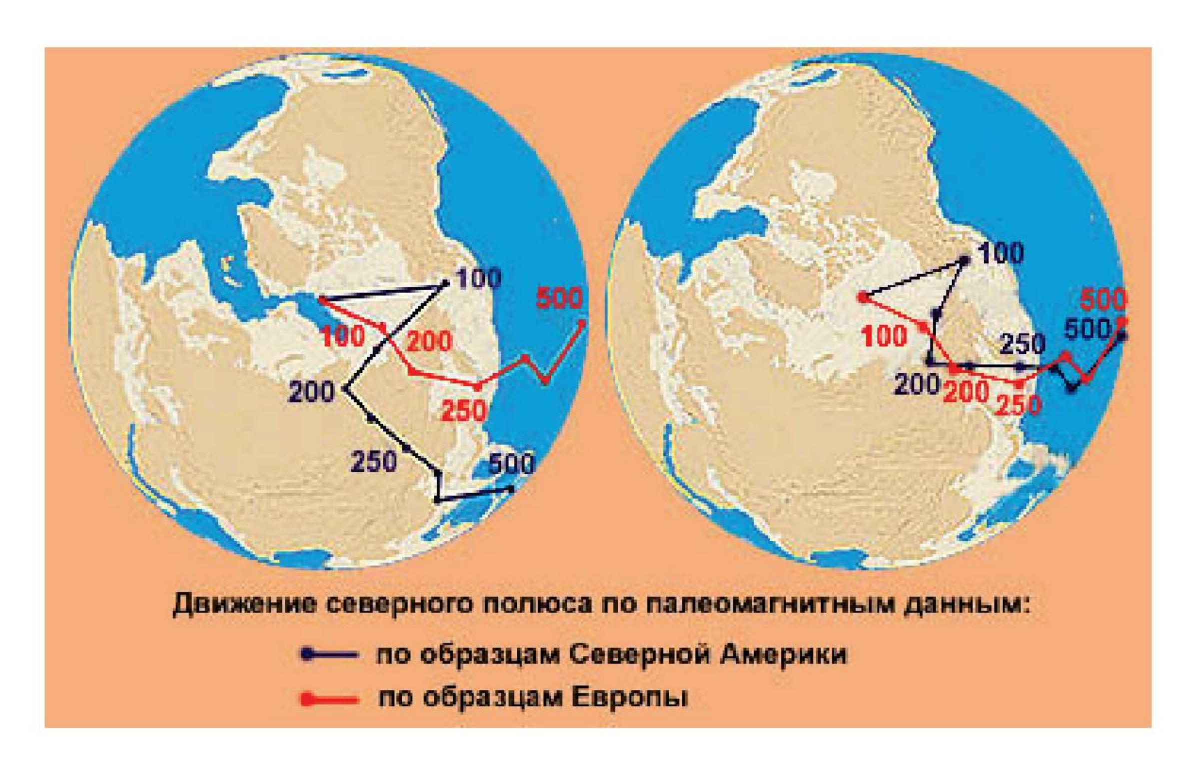
This seems particularly interesting because the active expansion of our planet (according to the conclusions obtained) began only about 200 million years ago, and the data accumulated by science refer to an earlier period. That is, we have the opportunity to restore events even **before the increase in the size of the Earth!** However, first we need to dwell on one more related issue...

At one time, paleomagnetologists discovered an interesting fact, which they called pole drift. It turned out that **the Earth's poles were not always in the same place, but changed their position quite significantly.** At the same time, measurements of paleomagnetic poles for different continents turned out to be **mutually consistent until a certain point in time,** which clearly indicated that until this point in time **the continents were connected to each other** (see ***Fig. 23*** and ***Fig.*** 24). This was used, among other things, to confirm the theory of plate tectonics. But, as is obvious, the connection of the continents is also suitable for the theory of the expansion of the Earth, because on the small Earth the continents were also united together.



*- **Fig. 23** -*

From the above figures it is clear that over the period 500 - 200 million years ago the drift of the poles was of a mutually consistent nature. At the same time, if you look closely, you will notice that the drift of the poles in the period of time 500 - 200 million years ago is very **close to movement in a straight line !** And only less than 200 million years ago the poles suddenly began to shake.



- Fig. 24 -

In this regard, the following hypothesis looks very logical: **there was no drift of the poles, but their rotation around a certain axis !!!** And there is nothing special about this: as any physicist knows, any three-dimensional body has three degrees of freedom in rotation. Two of them are well known to science: one is the daily rotation of the Earth around its axis, the other, called precession, is the rotation of the Earth's axis around a certain axis of precession with a period of 25,800 (according to other sources - 25,920) years. lies in

Now we undertake to assert that the Earth also has a third type of rotation - a kind of **global rotation,** which occurs extremely slowly: over many hundreds of millions of years, one additional revolution occurs. At the same time, the fact of a good coincidence of paleoclimatic and paleomagnetic data (i.e., the connection, ultimately, with the drift of the geographic and magnetic poles) leads us to the conclusion that there is a global rotation of not only the crust, but also the entire Earth as a whole - otherwise this coincidence would not exist. In this case, the absolutely exact correspondence of the magnetic and geographical poles, which does not exist at the present time (the magnetic axis is tilted to the axis of rotation of our planet by about 11.5 degrees now, is not so important), only an approximate coincidence is important.

This global rotation for the small Earth can be clearly seen in the indicated rectilinear and coordinated movement of the poles until about 200 million years ago, when the active expansion of the planet began, which was accompanied by a change in the position of the split continents relative to the Earth's poles. Since from that moment the continents no longer formed a single whole and they had freedom of maneuver on the increased surface of the planet, their movement ceased to be mutually consistent and acquired individual characteristics for each continent. Therefore, the trajectories of the poles calculated for different continents ceased to coincide with each other and acquired a very curvilinear character from the indicated point in time. But let us return again to the small Earth, i.e. towards the Earth **before** its expansion...

It is obvious that, knowing the displacement of the poles and connecting it with the global rotation of the planet, it is possible to determine the speed of such rotation. Unfortunately, according to paleomagnetic reconstructions, the pole in the northern hemisphere turns out to be somewhere in the region of the modern Pacific Ocean, and these reconstructions do not provide us with sufficiently accurate data to determine the rate of global rotation of the small Earth in the period before intense expansion. Therefore, calculations are possible only for the southern hemisphere, where the pole directly crossed the whole of A

An interesting result is obtained: the small Earth in the period 500-200 million years ago had **a uniform (!!!) global rotation at a speed of approximately 0.5 degrees per 1 million years.** That is, in 720 million years, our planet (and with it the poles) made one additional revolution.

Let us note several significant points.

Firstly, this is the rotation speed of **the small Earth.** With the beginning of the expansion, the speed of the global rotation of the planet, due to a change in its moment of inertia, inevitably had to also change. But it was not possible to determine with any acceptable accuracy this change in the speed of global rotation from the available data, which is very regrettable, since it can provide rich material for a detailed calculation of the absolute movement of continents in the last 200 million years (i.e., since the beginning of the expansion of the Earth). There is room for other researchers...

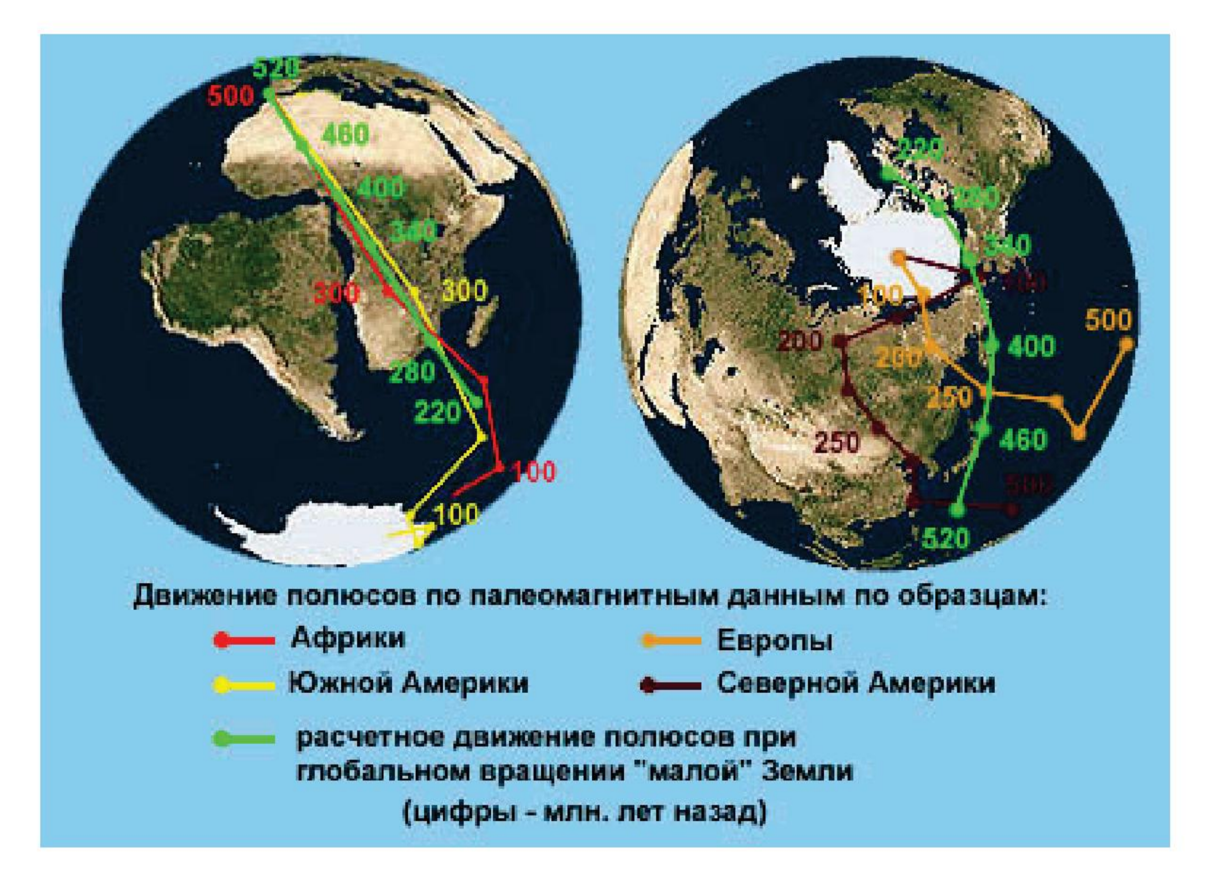
Secondly, an important result is **the uniformity of the global rotation of the small Earth,** which is the most logical for such rotation from the point of view of physics. Although, of course, the studied time range (500-200 million years ago) is small in order to neglect the possibility of even slower changes in the speed of global rotation (after all, the speed of the Earth's daily rotation slows down due to tidal effects caused by the attraction of the Moon). But to determine such slow changes, one needs to have reliable and accurate data on climate and paleolatitudes in the even more distant past (billions of years ago from the present).

Thirdly, no less important is the result that **the global rotation of the small Earth was carried out around an axis perpendicular to the axis of the planet's daily rotation!** This conclusion is not at all obvious for the reconstruction of the movement of the poles on a planet of modern size, but for a three-dimensional model of a small Earth it is quite unambiguous (the rotation axis is presented in the reconstructions of the appearance of a small Earth in **Fig. 27-33,** see below).

And fourthly, the obtained value of the global rotation rate - 0.5 degrees / million years - is of the same order as the estimates of paleomagnetologists, who for different continents and different periods of time most often give values of the speed of pole drift in the range of 0.3 - 0.8 degrees per million years.

To compare the displacement of the poles due to the global rotation of the small Earth with the available data on the drift of the poles, it was necessary to reproduce their movement relative to the continents on a planet of modern size. As can be seen from ***Fig. 25,*** the calculated movement of the pole in the southern hemisphere of the small Earth during its global rotation ideally coincides with the available data for the southern hemisphere, but for

northern, the calculated trajectory is seriously different from the data of S. Runcorn and I. Erving shown in this figure.

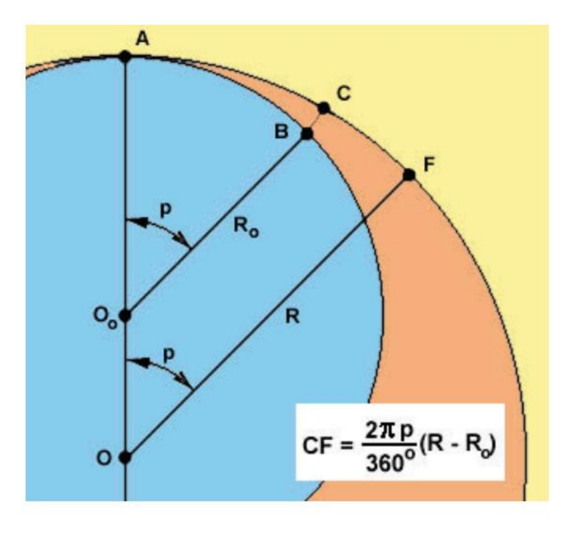


- ***Fig. 25*** -

But, firstly, during paleomagnetic studies the paleolatitude of rocks is calculated (as mentioned earlier, from the angle of inclination of the remanent magnetization), i.e. latitude of location of the rock at the time of its formation. And to do this, it is necessary not only to clearly record the exact location of the rock samples being studied, but also to quite accurately know the entire subsequent geological history of the area under study (i.e., know what deformations and displacements this rock has experienced). So an error in paleomagnetic data of 5-10 degrees can be considered very good.

And secondly, the above reconstructions of the movement of the poles were carried out by other researchers for the Earth of modern sizes. We are considering a small Earth, for which these reconstructions must be recalculated using a new one, which is clear from ***Fig. 26.*** If at a certain point A a certain paleolatitude was (90o-p), then the distance to the pole at point B on the small Earth (which on the modern Earth will correspond to point C) will obviously differ from the distance to the pole F calculated for the modern Earth . Obviously, the error in determining the pole (CF) will be greater the further from it the samples for calculations are taken. And if the calculation of the movement of the pole across the African continent was carried out using samples taken, including from this continent itself, then the movement of the pole in the northern hemisphere was determined using samples from Europe and (at best) from

central regions of North America, which is obviously far from it. Therefore, in the reconstructions given by S. Runcorn and I. Erving there is obviously a very significant error.



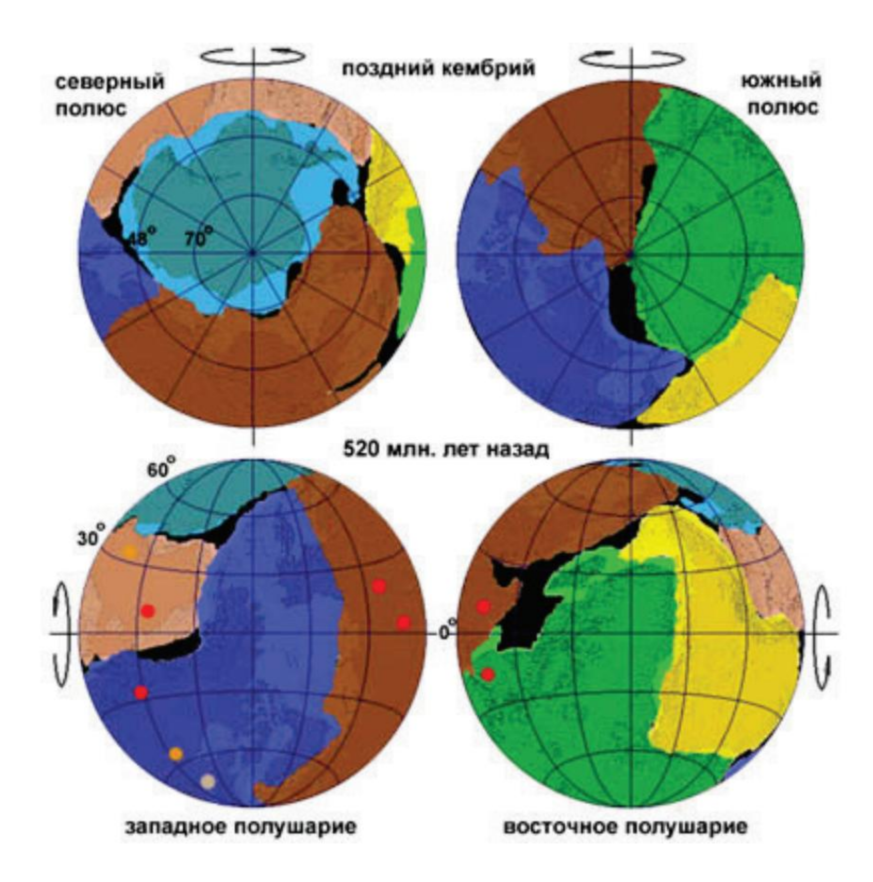
- *Fig. 26* -

In accordance with the above considerations, the author reconstructed the change in the position of the continents relative to the poles on the small Earth, due to its uniform global rotation at a speed of 0.5 degrees per 1 million years, and compared it with paleoclimatic and paleomagnetic data. The results of this reconstruction are presented in ***Fig. 27 - 33.***

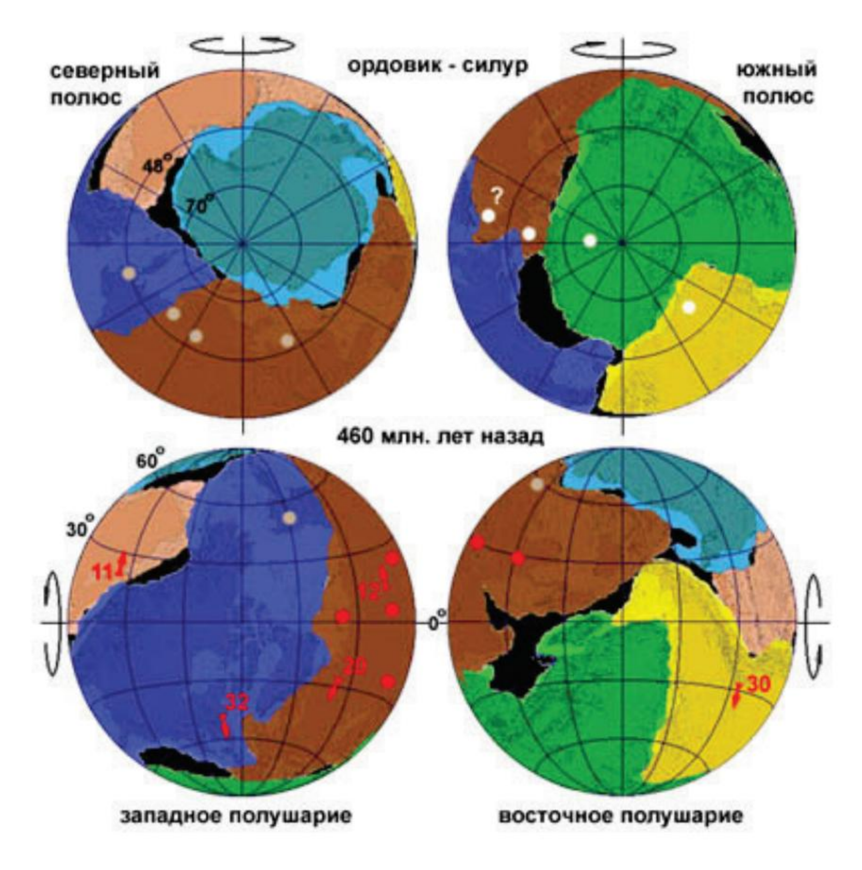
As can be seen in these figures, **the reconstructions are almost perfectly consistent with the available data up to the time of the Earth's expansion.** During the Cambrian period - ***Fig. 27,*** Ordovician and Silurian - ***Fig. 28,*** Devonian - ***Fig. 29,*** carbon - ***Fig. 30*** and Perm - ***Fig. 31*** - climatic zones are located exactly where they should be. Equatorial climatic conditions are observed in areas close to the geographic equator, glaciers and temperate climatic conditions are found in the high polar and mid-latitudes, and the tropics and subtropics occupy an intermediate position.



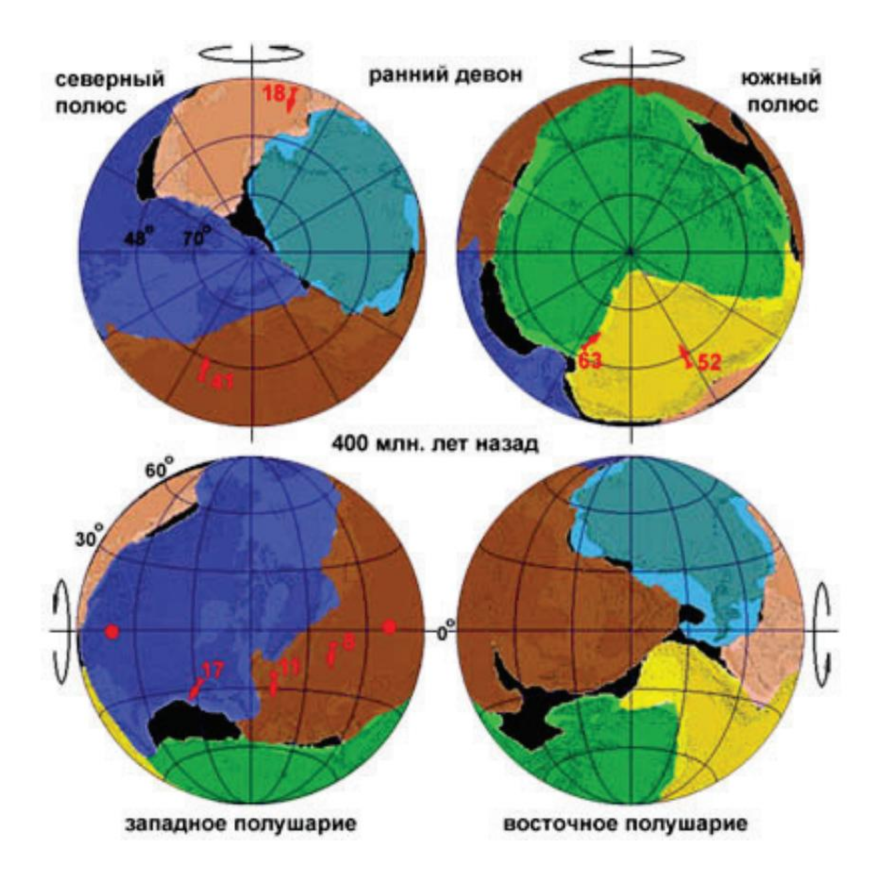
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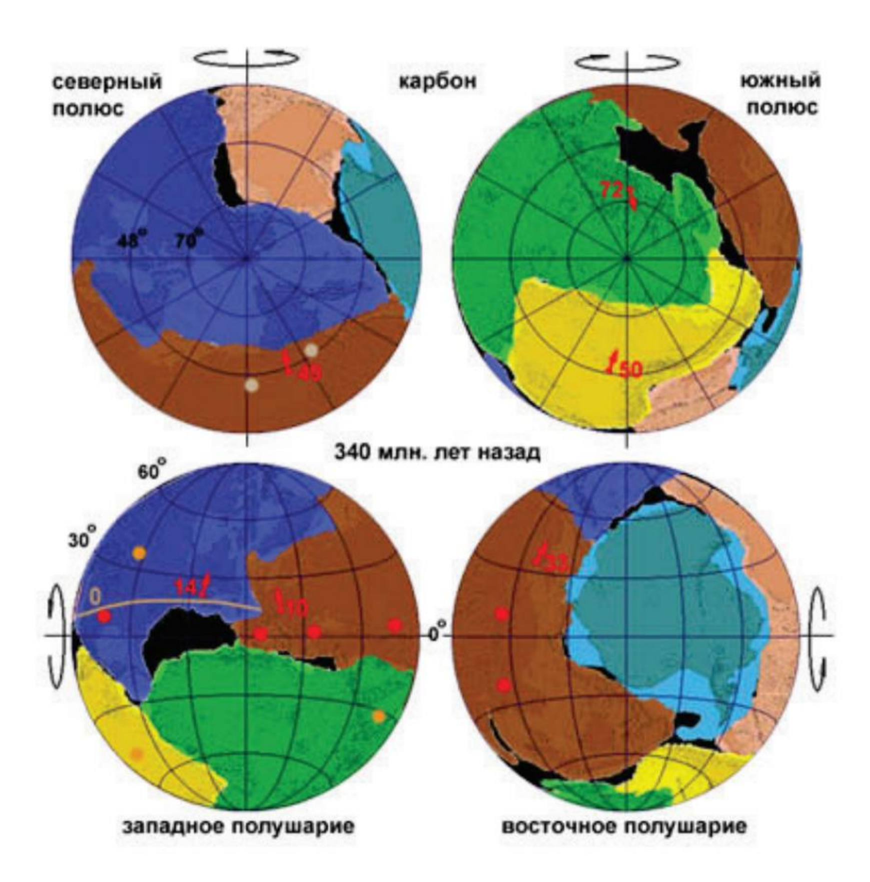
Rice. 27. *"Small" Earth during the Late Cambrian period.*



Rice. 28. *"Small" Earth at the boundary of the Ordovician and Silurian.*

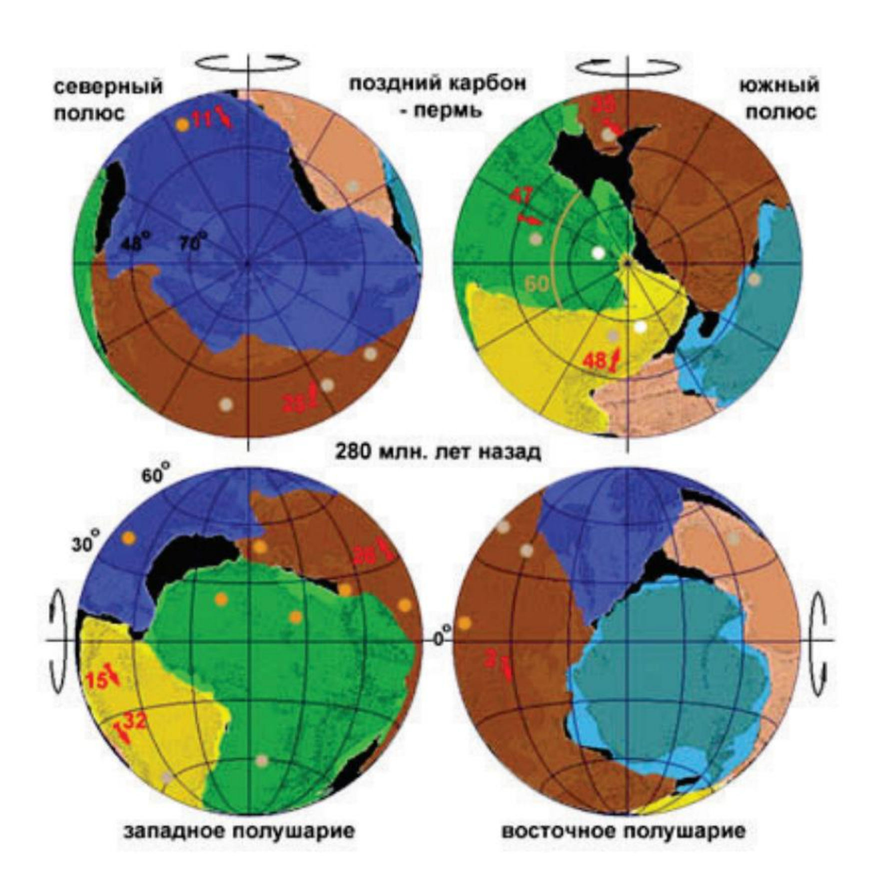


Rice. 29. *"Small" Earth in the Early Devonian.*



Rice. 30. *"Small" Earth during the Carboniferous period.*

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Rice. 31. *"Small" Earth at the boundary of the Carboniferous and Permian.*



LEGEND for Fig. 27 – 33.

Paleolatitudes appear exactly at the geographic latitudes whose values they indicate. And the paleomagnetic vectors perfectly coincide with the direction to the poles of the small Earth.

Moreover, **the reconstruction of the small Earth allows us to obtain a much better agreement between paleomagnetic and paleoclimatic data than reconstruction of the past based on continental drift .** For example, S. Ushakov and N. Yasamanov (Continental Drift and Climates of the Earth), in their reconstruction based on the theory of plate tectonics, are constantly forced to explain the discrepancies and coincidences with reservations of these data, which they have encountered for almost the entire time since the Cambrian period in various regions. But they had much greater freedom of maneuver: they could move and rotate continents in the free space of the Earth of modern sizes. We are limited not only by the rigidly fixed monolithic position of the continents (as components of the single crust of the small Earth), but also by the uniform global rotation of the planet, which uniquely determines the change

the positions of the continents relative to the poles.

However, excessive freedom of maneuver, like a double-edged sword, can not only help, but also lead far away from the truth.

The popularity of the theory of plate tectonics and the commitment of official scientific circles to it gave rise at one time to such a widely known myth as the Great Gondwana, which glaciation . supposedly lasted from the Ordovician to the end of the Permian (i.e. about 200 million years!) and captured all the continents that made up Gondwana (Africa, South America, Antarctica and Australia). As a consequence of this myth, it followed that at the peak of this glaciation at the end of the Carboniferous - beginning of the Permian (about 300 million years ago), the symmetry of climate in different hemispheres was greatly disrupted and the climate equator described a strange curve somewhere in the region of 20 degrees latitude to the north geographic equator. You won't see any explanations for this anomaly...

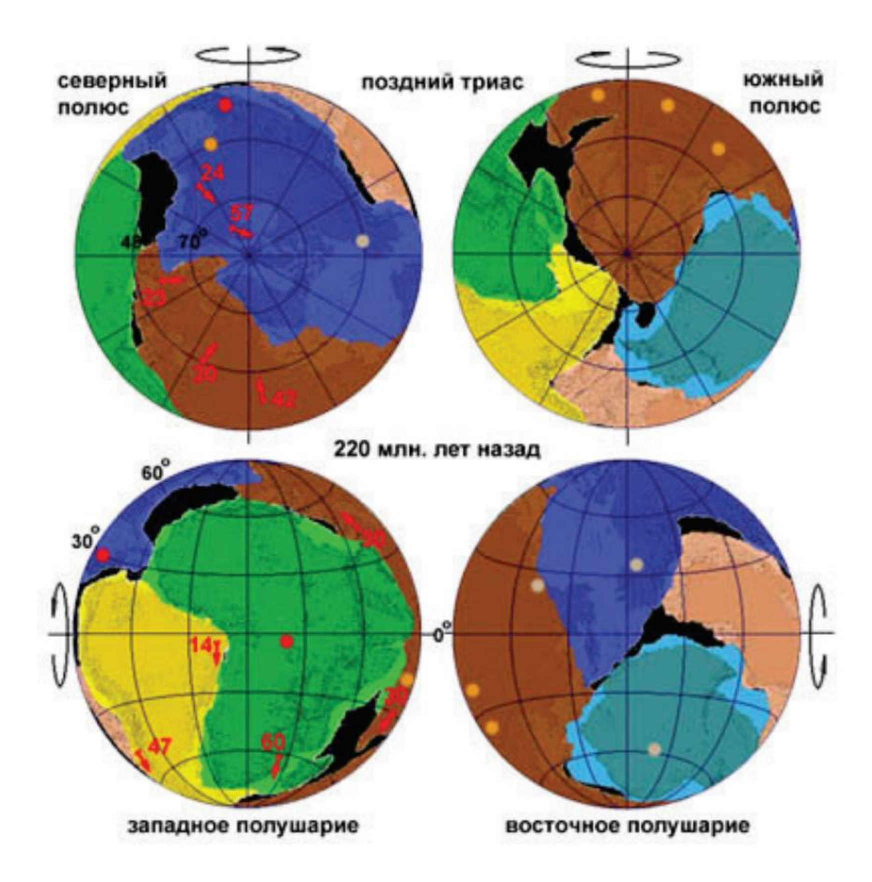
Now we undertake to assert that **there was no great glaciation** !!! Indeed, as a result of global rotation, over 200 million years the Earth has made more than a quarter (!) of a revolution, which is why the polar zone has shifted by the same angle. And therefore, one cannot lump together the traces of Ordovician ice in northwest Africa and the end-Carboniferous glaciers in southern South America and Africa. This, with very big reservations, could only be done on an Earth of modern size, but the global rotation of the small Earth removes all contradictions and allows us to avoid such awkward exoticism.

It should, however, be noted that a certain cooling, although not in such scale, it still took place during the indicated period, but we will return to this later...

One more thing. For a long time there was no sufficiently reliable Paleozoic paleomagnetic data for Australia. This made it possible to place it almost anywhere in reconstructions of continental drift (as long as the climate coincided). But more recently, Australian paleomagnetologists P. Schmidt and B. Embleton, as a result of their research, came to the conclusion that about 1.6 billion years ago the radius of the Earth was only about 55 percent of its present value, and all the current continental masses were closely adjacent to each other. It is perhaps no coincidence that scientists from the missing continent obtained results that confirm the expansion of the Earth, and not continental drift...

But let's return to our reconstructions of the appearance of the small Earth, which, in fact, was small only until the Permian-Triassic boundary, when the process of its expansion began.

In ***Fig. 32,*** which presents a reconstruction for the Late Triassic, does not match the data as well as for previous time periods. And if for climate data there is still no serious discrepancy with the geographical position of the continents, then paleolatitudes and paleomagnetic vectors indicate a slightly different position of the poles than the calculated one.

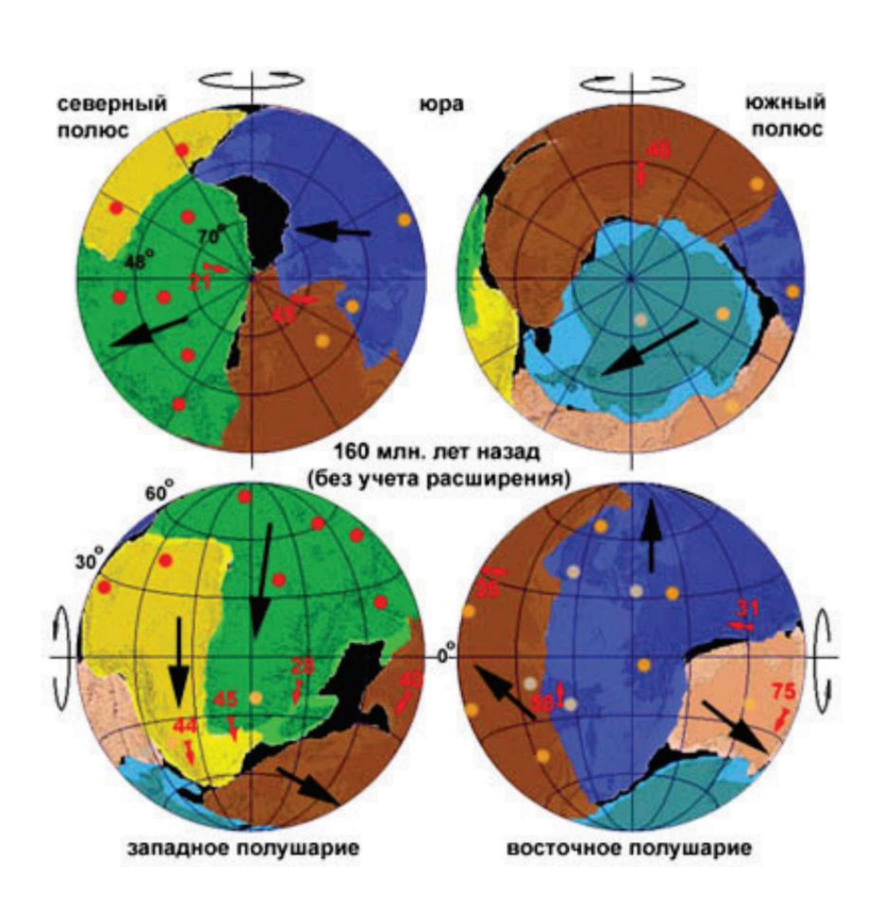


Rice. 32. *"Small" Earth in the Late Triassic.*

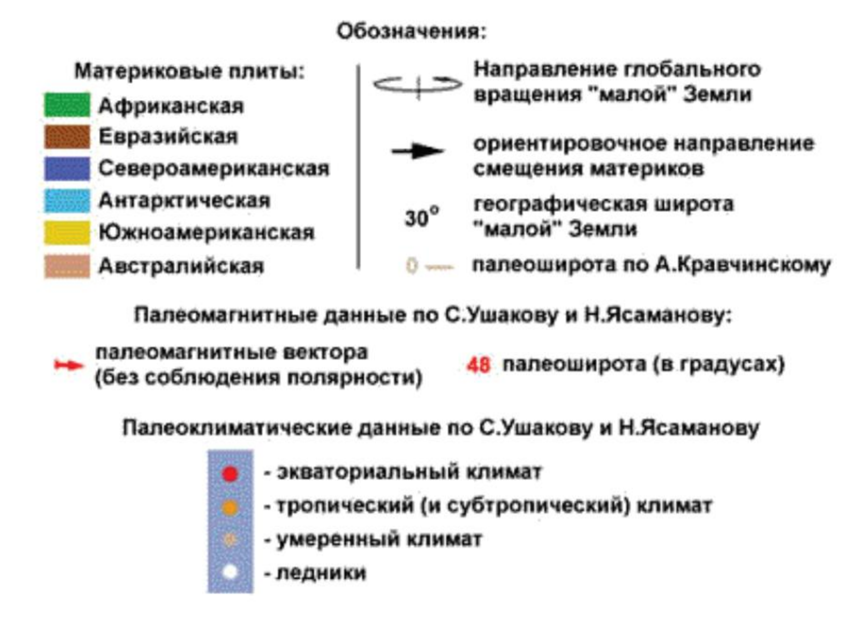
It is interesting to note that the discrepancy between the data and the Triassic reconstruction can easily be almost completely eliminated if we assume that the **global rotation of the Earth was slowing down during this period.** This slowdown in global rotation could well be due to the fact that, **at the Permian-Triassic boundary, the active release of hydrogen from the deep layers began,** which caused not only changes in the regime of the Earth's interior, but also a slight increase in its moment of inertia (due to a drop in density in the center and associated with changes in the density gradient with depth).

It is worth recalling the trace of the Hawaiian updraft, which indicates the displacement of the continents of the northern hemisphere during expansion in the same direction as the global rotation of the Earth. And this creates both a visible slowdown in rotation at the beginning of the process and a reverse movement of the pole in the future (after all, at the moment the expansion began, according to our calculations, the north pole was in the Greenland region). The difference between the beginning and the end of the Hawaiian trail only on modern Earth is almost 40 degrees in latitude!!!

But if, as could be seen earlier, the Triassic period was not yet accompanied by any serious change in the size of the Earth, then in the Jurassic period the process of expansion had already picked up a noticeable pace. As a result, we have an absolute discrepancy between the climate and paleolatitude data for the picture obtained during the reconstruction of the small Earth for the Jurassic period ***(Fig.*** 33). This is understandable: the Earth ceased to be small and fragments of its old crust (i.e. continents) began to scatter in different directions.



Rice. 33. *"Small" Earth in the Jurassic period.*



LEGEND for Fig. 27 – 33.

Thus, **modeling the past appearance of the Earth based on mythological data (!!!), dating back at least several thousand years, agrees very well with the available scientific data about this past, which confirms the hypothesis of the expansion of our planet.**

However, according to the existing theory of V. Larin, the increase in the size of the Earth (which can already be considered practically proven) should occur continuously from the moment the planet was formed, but according to mythology (and according to the data we received) it was observed **only from a certain moment.** What could have served as a trigger for the sudden intensification of the processes of expansion of the planet?..

In search of an answer to this question, let us turn once again to what we know about the structure of the subsoil, which reveals a very interesting phenomenon: in the mantle, at a depth of 100 to 300 km, there is a certain unique layer **- the asthenosphere.** The asthenosphere is notable for the fact that, according to scientists, the following happens in it:
called **zone melting**

The asthenosphere is a layer of the mantle in which the substance is in a more heated and (as a result) more plastic fluid state than the surrounding layers. Due to these conditions, in the area of the asthenosphere, a division of material occurs according to density: lighter elements are forced up, and heavier elements sink down. This, in fact, constitutes the process of zone melting, during which the phase state of the mantle material changes (the packing density of atoms and the volume occupied by a particular rock changes).

Such a change in the phase state of matter in the region of zone melting is accompanied by the release of additional heat, generating something like **a front of increased temperature** in the mantle.

By heating the underlying layers, the asthenosphere makes them less dense and more plastic and involves them in the process of zone melting. Thus, **the asthenosphere itself, as it were, makes its way down into the depths of the mantle -** to where the substance has not yet undergone a phase change and still contains light substances, necessary for zone melting. And together with the asthenosphere, the front of increased temperature moves deep into the mantle...

It is believed that the asthenosphere formed almost simultaneously with the Earth's crust and since then, thanks to the properties of zone melting, has deepened to the distance at which it is now located. There were no grounds for revising the speed of movement of the asthenosphere.

Let us now assume that **the asthenosphere, after its formation, moved much faster** than expected, **and somewhere in the Permian period it reached the core of the small Earth.**

But along with zone melting, its zone of elevated temperatures also moves; hydrides (located in a the solid core) and hydrogen solution in metals (liquid outer core) react quite strongly to temperature changes. It is clear that in this case, **when the asthenosphere reaches the core, the active release of hydrogen from it should begin.** Moreover, at the beginning of the process, when the temperature of the outer core increases, where hydrogen is only dissolved in the metal and there is less of it than in the hydride, the release of hydrogen is not so active, although a clear jump should take place. But when this inevitably leads (with some time delay) to a change in conditions in the inner core, then **the release of hydrogen sharply increases.**

Let us note that it is precisely this nature of the processes that can be traced in events on the surface: at the end of the Permian and Triassic - only the splitting of the old crust into modern continents and the outpouring of magma displaced by hydrogen from the upper mantle in the form of traps, and from the Jurassic period - rapid expansion, the growth of new oceanic crust.

But the released hydrogen produces both mechanical mixing of the various layers of the mantle and enters into chemical reactions with the substance of the mantle (about the chemistry of the process - a little later), changing its composition. This is accompanied by the saturation of the mantle with light volatile substances (the so-called fluid) and creates the opportunity for repeated Thus, **after some time** swimming trunks (approximately from the Triassic-Jurassic period), **a new asthenosphere is formed,** which again begins its ominous path into the depths of the Earth.

Then it turns out that, firstly, **the currently observed asthenosphere is already secondary ;** and secondly, its speed is much (!) greater than previously estimated. For comparison: in one case it took more than 2 billion years to travel the path, in the other - only 150 - 200 million years!..

It is interesting that, according to the proposed hypothesis, the rate of advancement of the secondary asthenosphere, equal (in order of magnitude) to about 1 km per 1 million years, gives exactly the value of the speed that the primary asthenosphere must have in order to travel from the crust to the core of the small Earth as times during the period from the formation of the consolidated crust to the Permian-Triassic boundary...

Theoretically, after some time, the new asthenosphere should also reach the core of the planet, but whether by that time it will still be hydride (i.e., whether hydrogen will still remain there in noticeable quantities) and when this will happen is impossible to even estimate, since, as we have seen, the expansion process continues to this day, ever increasing the distance that the new asthenosphere needs to travel.

However, we will return to forecasts for the future... In the meantime, you can use the resulting model to clarify the details of our planet’s past.

So, previously the radius of the Earth before expansion was 0.652 from the modern one. This means that **the surface gravity was 2.35 times greater than today.** And if (to the zero approximation) we assume that the mass of the atmosphere did not change during expansion, then on the small Earth the pressure was about 5.5 atm!

There are estimates by researchers who recognize the possibility of pressure in ancient times at a level of 4.5 atm, which is in good agreement with the result we obtained (especially considering that with the release of hydrogen from the bowels of the planet, the mass of the atmosphere inevitably had to increase).

Further.

...geologists have long been puzzled by the exceptionally strong changes in the structure and composition of some of the oldest rocks lying near the surface of the Earth. These rocks have such features as if they were formed under pressures that currently exist at depths of 30-50 kilometers. But at the present level of our geological knowledge, it seems almost incredible to admit that thick masses of these rocks rose to the surface from such depths. However, if the radius of the Earth 3.5 billion years ago was less than modern, say, half, then the force of gravity significantly exceeded the current one, and such pressure could be achieved at depths not of 30-50, but only about 7.5 - 12.5 kilometers, from where these rocks could well have risen to the surface of the Earth (E. Milanovsky, Is the Earth expanding? Is the Earth pulsating?).

The calculation for the mythological ratio of changes in the size of the Earth, although it gives slightly different figures (12 - 20 km instead of 7.5 - 12 km), also fits well into geological requirements.

And further. Quite often, researchers, reconstructing pictures of the past based on the data obtained, are forced to note **the predominance of smoothed relief in antiquity and the relatively rapid destruction of mountain systems.** But this is exactly what should be observed **under conditions of increased gravity and pressure!..**

And the smoothed relief is in good agreement with the often stated shallowness of the seas. However, with this, everything is no longer so ideal... After all, if you count all the modern water of the oceans onto the small Earth, then there is absolutely no room left for land, which is completely inconsistent with the available data on the presence of vast expanses of land in the past.

Of course, the resolution of this contradiction suggests itself: **previously (before the expansion) there was much less water on the Earth's surface.** And during expansion, the hydrogen released from the depths on its way up interacted with oxygen (of which there is plenty in the Earth), forming water that replenished the World Ocean.

However, here we come to questions of chemistry (and everything connected with it in geology), which may turn out to be somewhat complex for those uninitiated in the corresponding school course, but provide so many important details of the past (and the future - note in parentheses) that we can skip them does not seem acceptable. So, about chemistry...

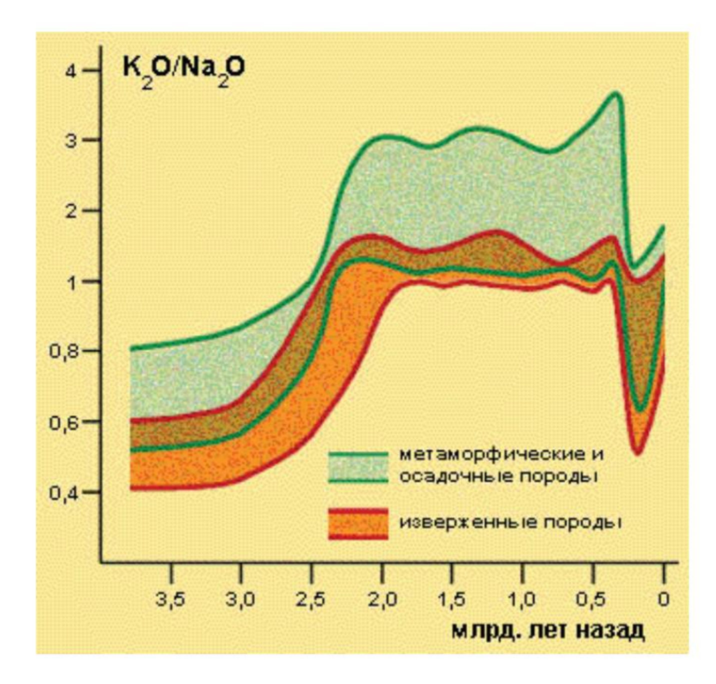
Different rocks have different chemical compositions. Depending on the composition breeds are divided into the following separate large groups:

Oxides	Volcanic and plutonic rocks					
	sour	average	basic		ultrabasic	
	granite	andesite	basalt anorthosite peridotite			Dunit
SiO2	72,5	60,0	49,0	50,0	44,0	40,5
TiO2	0,5	1,0	1,5	0,2	0,1	0,02
Al2O3	14,0	17.0	16,0	28,0	5,0	1,0
High	1,5	6,0	9,0	12,5	3,5	0,7
MgO	0,5	3,0	6,0	1,2	37,0	46,0
Na2O	3,5	3,5	3,0	4,0	0,5	0,1
K2O	5,5	2,0	1,5	1,0	0,2	0,04
FeO	1,8	6,1	11,2	2,1	8,3	8,1

This division is based primarily on the fact that rocks containing different amounts of alkalis (sodium and potassium, appearing in the table under the designations Na2O and K2O) also have different properties. And in many respects, it is precisely on this basis that, for example, the basaltic oceanic crust is distinguished from the continental crust, which contains rocks from basalts to granites.

It is known that **at different periods of time the formation of different types of rocks prevailed in the Earth's crust.** So in the Azoe and the beginning of the Archean (approximately until 3.0 - 2.5 billion years ago), the rocks forming the crust were more diverse in composition and somewhat closer to basalts than to granites. Over time, the number of rocks similar in composition to granites, but with a significantly lower potassium content, gradually increases in it. The breeds of this time are characterized by the so-called. the anhydrous, sharply reduced nature of the fluid coming from the depths (a gaseous mixture of light substances) and obvious traces of small-scale convection (mixing).

At the end of the Archean - the beginning of the Proterozoic, a radical change in conditions gradually gains strength: water appears in the fluid composition, and granites, characterized by a sharply increased alkaline content, predominate in the forming rocks metals (especially potassium). Moreover, the previously formed crust experiences dramatic changes, which are also characterized by an increase in the concentration of alkali metals in them. **The Proterozoic period** is known as **a period of general granitization,** and a sharp increase in potassium in the composition of the crust is called **the potassium explosion** (see ***Fig.*** 34).



- Fig. 34 -

The next **sharp change in the composition of the forming rocks occurs at the boundary of the Paleozoic and Mesozoic** (approximately 250 million years ago), after which the formation of granites is not observed, and only basalts, usually depleted in alkali metals, enter the crust). At the same time, the decrease in the content of alkali metals (and especially potassium) in the forming rocks takes much less time than its increase at the turn of the Archean and Proterozoic. **The end of the potassium explosion is even more explosive.**

Let us now try to understand the described processes, based on the fact that within the framework of the hydride model, in the bowels of the Earth, in addition to the main elements listed in the table of rocks, hydrogen is also contained in quite a significant amount (not by weight, but by the number of atoms).

So, few researchers doubt that in the early stages of the Earth's existence, the elements that made it up were in a more mixed state than they are now. And the entire further evolution of the Earth is directly related to the so-called. differentiation of its interior, which consists in the fact that lighter elements and substances (according to Archimedes' law) rise closer to the surface, and heavier ones -
on the contrary, they tend to the center of the planet.

There is also no doubt that elements and substances in the bowels of the planet enter into chemical interaction with each other, which (from the point of view of chemistry) can be either reductive or oxidative in nature (we will not be interested in other types of interaction).

Based on the fact that the Earth contains a lot of oxygen, and from its chemical properties, it is quite obvious that **the main oxidizing element will be oxygen.** And within the framework of the hydride theory, **the main reducing element**
Among the most common elements is **hydrogen.**

It is known that chemical reactions predominantly (all other things being equal) proceed in the direction in which the binding energy between the elements of the resulting substance is the highest. So, let's say, the binding energy of Al-O and Si-O significantly higher than the energies of the HO, Ca-O and Mg-O bonds, which are approximately equal to each other, but, in turn, significantly higher than the energies of the K-O and Na-O bonds. Therefore, in the early stages of the Earth's history, the oxidative nature of chemical reactions will prevail, because Hydrogen simply does not have enough strength to divert oxygen from more appetizing elements, including silicon, an element found in abundance in the depths. However

Thermodynamic calculations carried out by O.L. Kuskov, taking into account the compressibility of condensed phases, showed that with increasing pressure, the thermal effect of reduction reactions changes from endothermic to exothermic and the greater the pressure, the greater the amount of heat released during reduction. In the case of reduction of silicon oxide with hydrogen (or carbon), the inversion of the sign of the thermal effect appears in the region of 400–108 Pa. Consequently, at pressures greater than 400 108 Pa, reduction reactions will spontaneously occur, while in the region of lower pressures, on the contrary, oxidation reactions should occur, and the lower the pressure, the greater their exothermic effect will be (V. Larin, Hypothesis of an initially hydride Earth).

That is, speaking in Russian, the mentioned **oxidation processes will occur closer to the surface of the Earth, and in the depths reduction reactions will predominate.** At the same time, oxygen released from the depths, rising upward, in the outer shells will be drawn into oxidation reactions, accompanied (under low pressure conditions) by the release of a large amount of heat, warming the upper layer of the Earth. At the same time, hydrogen coming from the depths ensures a sharply reduced fluid character, containing predominantly H_2 and CH_4. (The subsoil also warmed up, only due to reduction reactions, and the heating released new hydrogen).

Thus, we get **the whole set of conditions characteristic of the Azoe-Archean:** a highly heated outer shell, which, due to its small size, determines the small scale of convection and a significant diversity of the resulting rocks; a highly reduced anhydrous fluid (the composition of which is evidenced by small gas inclusions in ancient rocks), which also determines an insignificant amount of free oxygen in the primary atmosphere of the Earth.

But, naturally, this process could not continue forever. In the end, oxygen chose the most appetizing elements and began to work on others, among which was the main reducing agent - hydrogen. Thus, **the main characters included water,** which, as is known, is, firstly, a very chemically active substance; and secondly, a very light mobile substance, i.e. **capable of acting as a fluid in deep processes.**

Since there is less free oxygen, oxidation reactions with heat release have stopped in the outer layer; the shell cooled down and the so-called the process of consolidation of the primary solid crust, and active chemical processes shifted deeper. This happened approximately at the Archean-Proterozoic boundary. And it is precisely this time, following elementary logic, that can be considered the time of formation of the first

asthenosphere. But this is not all the results of the mentioned reorientation of chemical processes.

Oxygen, having switched to hydrogen, caused the latter (i.e. hydrogen) to begin to break the K-O and Na-O bonds (remember the bond energy) and thus release alkali metals.

But the formation of H-O bonds, among other things, changes the composition of the fluid to be more saturated with water, and water is an excellent solvent. And although the processes in the bowels are far from simple dissolution, the table of solubility of substances in water can also help us help.

Ions	K+	Na+	Ca2+	Mg2+	Fe2+	Al3+
OH-	R	R	M	M	N	N
SiO3 2-	R	R	N	N	N	-

It is clear that, first of all, the water will be saturated with the released alkalis, as constituent elements of the most easily soluble compounds. All this leads to the fact that **a flow with a greatly increased concentration of alkali metals, and primarily sodium and potassium, rushes upward.** At the same time, since the K-O bond is still somewhat weaker than the Na-O bond and potassium is somewhat more chemically active (the electronic radius of potassium is greater than the electronic radius of sodium), the relative concentration of potassium in the alkaline set brought up should also be increased. What we ultimately observe is in the form of a potassium explosion and a powerful process of granitization during the Proterozoic period.

It is quite obvious that since this process of changing the orientation of chemical reactions had to occur gradually, the potassium explosion was also quite significantly extended in time (almost 3/4 billion years).

All of the listed changes in chemical processes are fully consistent with the geological processes observed throughout the Proterozoic. Both the phenomenon of granitization and the significant water content in the fluid of that time are well known to researchers.

The events of the same period also correspond quite well to the assumption that by the beginning of the Proterozoic the asthenosphere had already formed, gradually making its way to the bowels of the Earth.

Since the melting zone is obviously an area of increased chemical activity, **the position of the asthenosphere itself in the depths will inevitably affect the nature of the processes,** including **in the outer shell of the Earth.** It is clear that the deeper the asthenosphere descends, the smaller its interaction front, the less the amount of fluid released from its zone. And this should manifest itself both in **a decrease in tectonic activity in the outer layers of the planet,** and **in a decrease in the flow of heat from the interior to the surface.** It is these processes that can be observed in general throughout the Proterozoic and especially the Paleozoic, the end of which (the Permian period) generally resembles the calm before the storm: tectonic activity is minimal, the platforms are generally stable, and there is a noticeable

colder weather...

The geological events of this period, despite their seemingly uninteresting stability, present a very interesting picture. It seems that **the Earth dries** and its bark begins to resemble the peel of a drying apple, the role **of out ,** the wrinkles and cracks of which are performed by the so-called aulacogens and geosynclines, as well as folded areas.

The Late Proterozoic was the aulacogenic stage of the development of ancient platforms. Over a large period of its history, more than 1 billion years, ***narrow linear ditches*** *- aulacogens - develop in the central regions of the platforms...* ***At the end of the Proterozoic, the downward vertical movements of the platforms intensify.*** *This occurs first in areas adjacent to aulacogens. The areas adjacent to them are drawn into the deflection... (V. Gavrilov, Journey into the Earth's past).*

The share of igneous rocks is reduced to 18-20%. *In geosynclines during the late Proterozoic,* ***folding epochs repeatedly appeared:*** *Gothic, Grenville, Katangese, etc.... Approximately 650 million years ago... the Early Baikal, or Katangan epoch of diastrophism appeared on the globe. Strong compression of accumulated sedimentary strata in many geosynclinal troughs, their metamorphism led to the elimination of the geosynclinal regime in a number of regions of the Earth... Simultaneously with the death of some geosynclines at the end of the Late Proterozoic, new geosynclines were formed in the north of North America, in eastern Greenland, on the British Isles, on northern Scandinavia... (ibid.).*

Precambrian platforms experienced predominantly ***slow downward vertical movements...*** *Gradually, more and more areas of the platform were drawn into subsidence, and areas of several million square kilometers were formed... In the Silurian, the size of geosynclinal seas sharply decreased. The global reduction in the area of seas and oceans is explained by the fact that at the end of the Silurian the diastrophism of the Caledonian tectono-magmatic era was especially intense. As a result, many geosynclines were transformed into platforms, which subsequently no longer experienced active tectonic movements and volcanism...* ***In the middle of the Carboniferous period, the earth's crust begins to experience a new wave of folding movements*** *-*

Hercynian tectogenesis. This was a very important tectono-magmatic epoch in the geological history of the Earth, which manifested itself over vast territories. ***On the site of many geosynclines mountains arise...*** *(ibid.).*

It is interesting to note that the picture of the Paleozoic fundamentally contradicts V. Larin's conclusion about the continuous increase in the amount of hydrogen released from the depths and (as a consequence) the continuous expansion of the Earth. And it is much more consistent with the hypothesis expressed by the author about the most important role of the asthenosphere in this process.

It should be said that the model of chemical processes proposed by V. Larin for the hydrid Earth and outlined a little higher with minor adjustments of emphasis by us also well describes the processes of the early stages of the development of the planet, but absolutely does not explain the events of the last half a billion years. In particular, this model does not at all explain **the abrupt end of the potassium explosion ,** as well as **the fact that the crust was formed exclusively by basaltic rocks from the beginning of the Mesozoic.**

Now we will try to fill this gap, and at the same time continue the story of geological events, which so far froze at the turn of the Paleozoic and

Mesozoic. A milestone that, from our point of view, is associated with **the greatest event in the fate of our planet - with the first asthenosphere reaching the Earth's core, highly saturated with hydrogen.**

However, now let us pay attention not so much to hydrogen itself, but to its combination with the most common element in the bowels of the Earth - oxygen, i.e. Let's turn our attention to ordinary water (we have already done this a little earlier, and this was precisely what was a small adjustment to V. Larin's model).

So, the end of the Permian period. The primary asthenosphere (and with it the front of increased temperature) reaches the core. The outflow of hydrogen increases sharply, which immediately interacts with oxygen, which is abundant in the depths. **The amount of water increases sharply and spasmodically.**

From the upward flow of aqueous fluid, **the Earth's crust first swells .** In the Permian-Triassic there was **widespread and rapid rise of continents.** The crust begins to crack at the seams and basalt traps are literally pushed to the surface.

In parallel, the formation of so-called trap intrusions occurs at depth (the formation of chambers of trap basalts inside the continental crust without their emergence to the surface). It is characteristic that no relief swellings were formed, and the creation of trap magma chambers was accompanied by a kind of gentle uplifting of the overlying layers, the explanation of which has long been a serious problem for geologists.

Now we can remove this problem from the agenda: with the general swelling of the earth's crust due to the beginning of degassing of the planet's interior, it is logical to expect not so much limited zones of increasing internal pressure on the crust that would form bulges, but rather a **uniformly distributed load that only lifts the overlying layers.** This is observed not only in the geological structure of trap intrusions, but also in the general uplift of continents that occurred during this process, as well as in the nature of trap eruptions on the Earth's surface (see earlier).

At the same time, naturally, all tectonic processes are activated: the crust shakes, bends and tears, volcanoes work not only at full power, but generally at the limit (the well-known activation of the end of the Permian - the beginning of the Triassic).

But these are all seeds. **A sharp change in conditions in the depths radically changes the state of the inner hydride core.** A stream of hydrogen literally gushed out of it, which immediately interacted with the oxygen of the mantle -

the water began to flow like a fountain.

However, as discussed earlier, hydrogen in hydrides plays a compacting role, significantly reducing the distance between adjacent metal ions. Consequently, as the amount of hydrogen decreases, the number of binding hydrogen threads, which provide high compressibility and compaction of hydrides, decreases. And this effect should manifest itself more strongly, the more active the process of dehydridization (i.e. loss of hydrogen) of the nucleus.

The core becomes more loose, **increasing in size.** By the way, one of the explanations for the periodic inversions of the Earth's magnetic field (i.e., the reversal of the south and north magnetic poles) is based precisely on the growth of the core, which is quite consistent with the magnetic leapfrog at the end of the Permian (see earlier).

But the expanding core inevitably expands the surrounding mantle, which does not have the same compressibility abilities as hydrides. **The planet begins to expand,** as it has nowhere else to go.

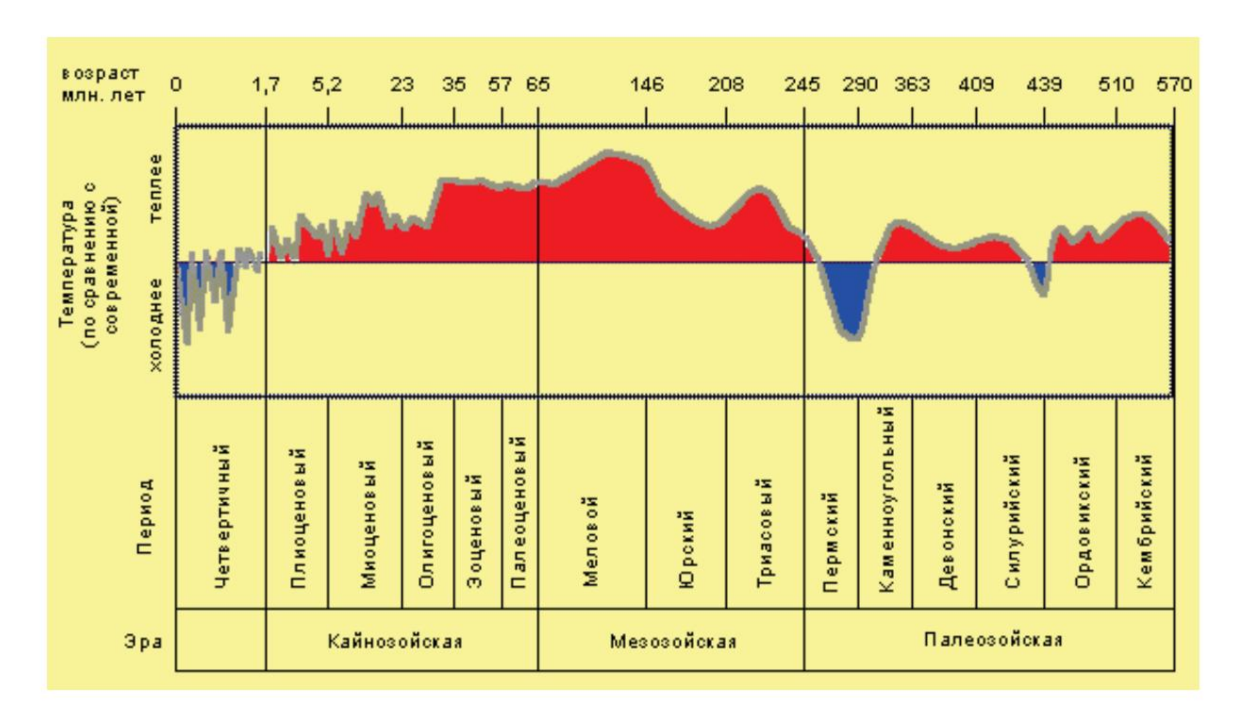
The expansion process is significantly enhanced by the fact that a powerful flow of water gives rise to so-called phase changes in the mantle. During these processes, the chemical composition of the substance does not change, but its structure changes, which in this case also becomes more loose, increasing in volume.

But water also enters into chemical and physicochemical (such as dissolution) processes. Only now there is incomparably more water, and with a limited amount of alkali metal compounds, **moderately and slightly soluble substances begin to dissolve in it.** As a result, in the composition of the fluid rushing upward, **the percentage of alkaline elements drops sharply,** which have already been washed out for quite a long time and spent on granitization (which, by the way, is also monitored through the gradual decrease in the alkali content in Proterozoic and Paleozoic rocks).

What does this lead to on the surface of the Earth? The fluid, highly saturated with water, brings to the surface basalt rocks depleted in alkalis, which are characterized by a higher density than granites or andesites. As a result, **fragments of the old crust that has burst from overstress float on the basalt layer like large floating islands.**

Powerful eruptions are accompanied by strong emissions of volcanic gases, extremely depleted in free oxygen and saturated with carbon dioxide. As a result , **the oxygen content in the atmosphere drops sharply, and the concentration of carbon dioxide increases.** This fact is well known to researchers of the Triassic period.

A strong influx of heat from the depths melted all the Permian glaciers and caused **global warming for a long time** (see ***Fig.*** 35). But melted glaciers do not at all lead to the flooding of land areas, because the size of the Earth began to increase, and the continents floated to the surface on a basalt layer. The sea, on the contrary, has receded from the continents.

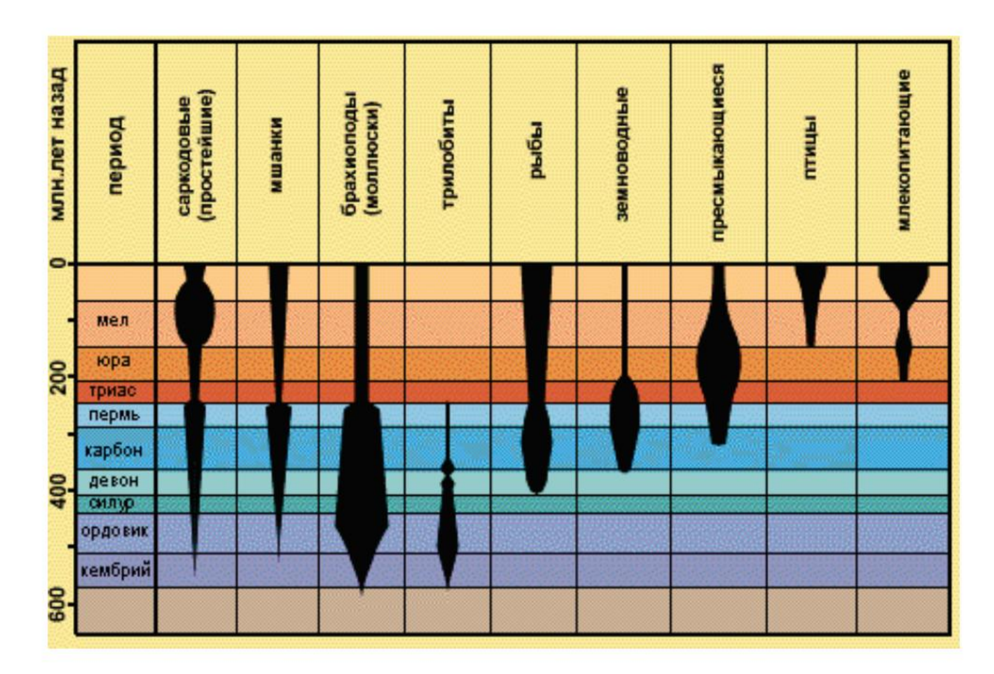


- ***Fig. 35*** -

Water on the Earth's surface rushes to places where the crust breaks, i.e. precisely to those places from where a powerful flow of fluid comes from the depths. Therefore, the decrease in oxygen content and the increase in carbon dioxide concentration in the seas and oceans is stronger than in the atmosphere. Plus a sharp increase in water temperature due to interaction with hot magma. Here are **the reasons for the Permian-Triassic massacre, which** not only destroyed aquatic inhabitants more than land ones, but also literally pushed the surviving remnants of life onto land.

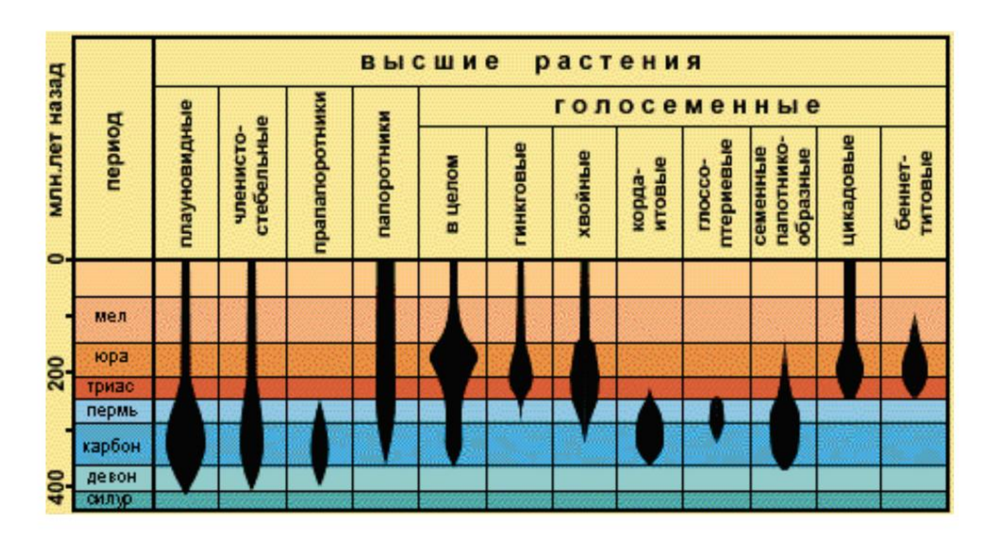
The Permian-Triassic massacre was so grandiose - it is believed that the most grandiose in the entire history of life on Earth - that there were much more attempts to explain it than the death of dinosaurs. Over the past decades, so many of them have accumulated that one list of them, as the American biologist Gould noted, could fill an entire telephone directory. There were supernova explosions near the solar system, and sudden bursts of cosmic radiation, and widespread desalination of the earth's oceans, and shifts of the ocean floor, and unexpected climatic cataclysms, and gigantic mountain-building processes (R. Nudelman, A Tour of Disasters).

Note that this list does not mention the expansion of the Earth at all...

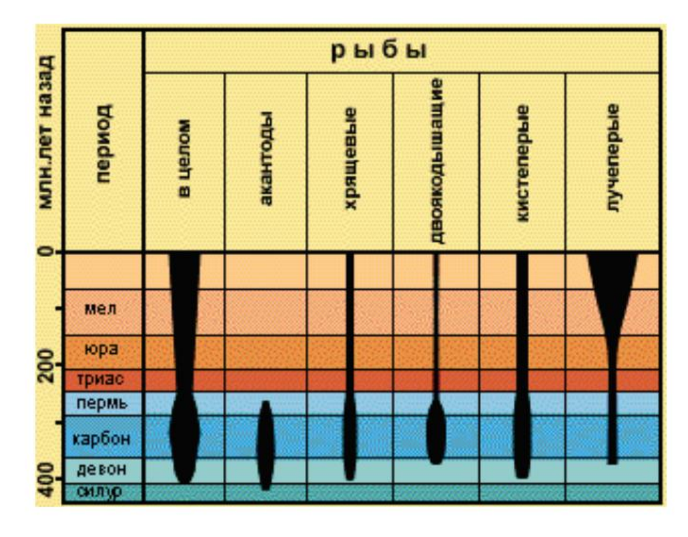


- ***Fig. 36*** -

In ***Fig. 36*** shows the importance of this period for the animal world, the composition of which changed qualitatively at the Permian-Triassic boundary. The flora also underwent similar changes (see ***Fig.*** 37).

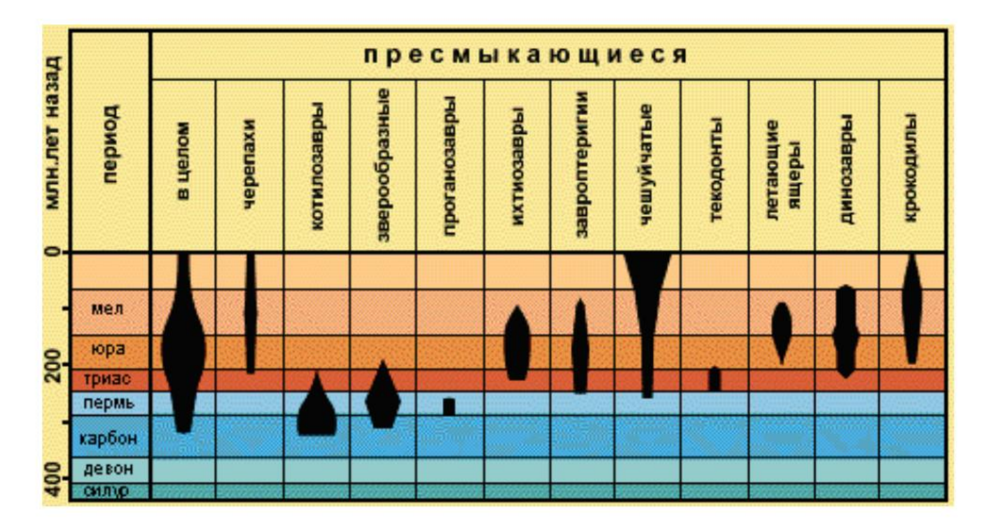


- ***Fig. 37*** -



- ***Fig. 38*** -

The picture of the Permian-Triassic massacre looks even more impressive when analyzing the consequences for individual species of the living world. Let's say, if there were fish both before and after the Permian-Triassic boundary (see ***Fig.*** 38), then at this very boundary **the extinction of some species and the beginning of the flourishing of others are clearly noticeable.** And this was reflected much more clearly, for example, on reptiles (see ***Fig.*** 39), which existed since the middle of the Carboniferous: **the Permian-Triassic boundary completely changed their basic composition.**

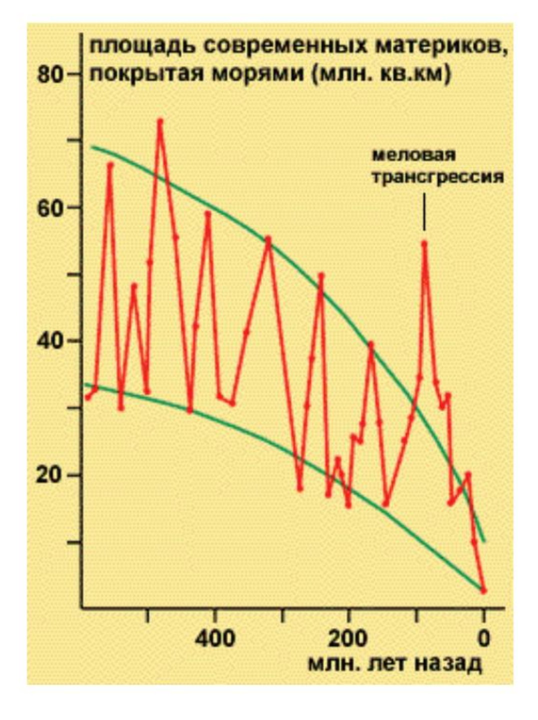


- ***Fig. 39*** -

However, these drawings reveal another important milestone: **the boundary of the Jurassic and Cretaceous periods,** when a serious renewal of the playing composition of the living world also took place, although not as radical as during the Permian-Triassic massacre.

From our point of view, both the Jurassic-Cretaceous jump itself and its weaker impact on the living world (than during the Permian-Triassic jump) **are caused not by a qualitative change in the nature of deep processes, but only by a quantitative one.** The process of degassing the interior and expansion of the Earth had already undergone its initial explosion, but it seems that only by this time, the Jurassic-Cretaceous boundary, a powerful flow of aqueous fluid reached the surface of the planet.

This can be traced to a number of factors. Firstly, it was during this period that there was a sharp increase in water in the World Ocean (see ***Fig.*** 40), called **the Cretaceous transgression :** the land was noticeably displaced. And since neither in the Triassic nor in the Jurassic did glaciers form due to high temperatures, the increase in the amount of water in the oceans during the Cretaceous period (with the continuing increase in the size of the planet -!!!) can only be explained by **internal sources .**



- ***Fig. 40*** -

Secondly, during the Cretaceous period deposits of gypsum, anhydrides, etc. were formed. substances containing **calcium,** including the substance that gave the name to the period itself - chalk. But calcium compounds are poorly soluble in water, and, according to our chemical scheme, for their mass release to the surface, a powerful flow of aqueous fluid is required, which, most likely, was the case. This is also confirmed **by an increase in the concentration in crustal rocks during this period of other elements whose compounds are slightly soluble:** magnesium, titanium, phosphorus, manganese, etc.

The smaller consequences of the quantitative leap at the Jurassic-Cretaceous boundary for the living world are quite explainable by the fact that by this time the Earth was inhabited by those species that **had adapted to new conditions of existence:** to life in a world that, although changing, was changing in one and the same way. same direction . After a certain explosion, the process of subsoil degassing stabilized again, but at a different - **quasi-stationary** - level (i.e., it did not stop, but continues to this day while maintaining certain **constant conditions of the process).** All the interesting things are over for now... The Earth is gradually expanding, accordingly, gravity and atmospheric pressure are slowly decreasing. The broken continents also gradually move away from each other as the Earth's surface grows, the gaps in which are replenished with magma basalts at mid-ocean faults. In parallel, there is a process of replenishment of the World Ocean due to water coming from the bowels of the Earth, which can still be observed today.

By modern definitions, volcanic gases contain primarily ***significant amounts of water vapor.*** *For example, gases from basaltic lavas of the Mauna Loa and Kilauea volcanoes (Hawaii Islands) at a temperature of 1200 ° C contain approximately 70-80% water vapor (by volume). In the fumarole gases of the Kuril Islands, which have a temperature of about 100 ° C, 79.7% H_2O (by weight) was found (A. Monin, Yu. Shishkov, History of climate).*

The pairs of solfatara-like fountains of Larderello, distributed over an area of 200 km2 in Tuscany (Italy), turned out to be interesting in composition. ***Water in these vapors is more than 95% by weight,*** *dry gas contains 97% CO_2 and 2% H_2S. Ammonia (0.7%), methane (0.3%) and hydrogen H_2 (0.1%) are detected. These vapors contain no oxygen at all (ibid.).*

All this fits perfectly with our chemical scheme. Indeed, for example, for the mentioned Larderello fountains, the atomic composition of hydrogen is only about 15% in dry gas. Well, if you take into account water, then in general there is more hydrogen! So where does free oxygen come from if there is so much hydrogen that it remains in excess...

Thus, it is clear that **the constructed model stands up to the test of completely different factual data, while explaining a number of issues from the past of our planet.**

But this is about the past, and what awaits us in the future?.. After all, as follows from the results obtained, the expansion process continues, gradually accelerating in time over the last couple of hundred million years (a result that, to be honest, the author did not want to get at all at the initial research stage; there was a version of only the expansion that had already passed and ended).

In principle, **two main options are possible:** with the complete loss of hydrogen by the nucleus, the expansion process eventually ends (as according to V. Larin's model); and another option - the planet cannot withstand the rate of degassing, and hydrogen released from the depths tears it into pieces.

If you look closely at our neighbors in the solar system, you can find examples that illustrate (apparently) the consequences of both possible developments.

Let's say that our closest neighbor, the Moon, has long since completed, as scientists believe, its geological history. Neither volcanic nor tectonic processes are found on it. And here's what's interesting: **the difference in the composition of the rocks of the lunar continents and seas is qualitatively similar to the difference between the continental and oceanic crust of the Earth!!!**

Moon	SiO_2	Al_2O_3 FeO MgO CaO				TiO_2	Na_2O	K_2O
"oceans"	43,76	10,31	19,69	8,76	10,60	5,38	0,38	0,09
"mainlands"	46,23	21,29	7,73	9,68	12,64	0,87	0,51	0,18

Therefore, it seems quite likely that **hydrogen purging of the interior also took place on the Moon, which could be accompanied by an increase in the size of the planet.** But then, based on the prevalence of rocks, one can try to reconstruct the past of the Moon.

Estimated calculations show that if there was a change in the size of the Moon, then it does not exceed 8-10%% (in radius). It is clear that this is a completely logical result: the smaller size of the planet implies less hydrogen and less time for its interaction with the rocks when leaving the planet. Naturally, in the depths of the Moon there are also completely different conditions in terms of pressure and temperature, which are much closer to the peaceful scenario.

It is also interesting to note that the continental rocks of the Moon are close to modern terrestrial basalts. This is understandable: inside the Moon, the conditions necessary to enable the active interaction of hydrogen in the interior with their oxygen, which on Earth were responsible for the process of granitization, may not have developed.

Comparison of terrestrial rocks with lunar rocks provides another interesting fact.

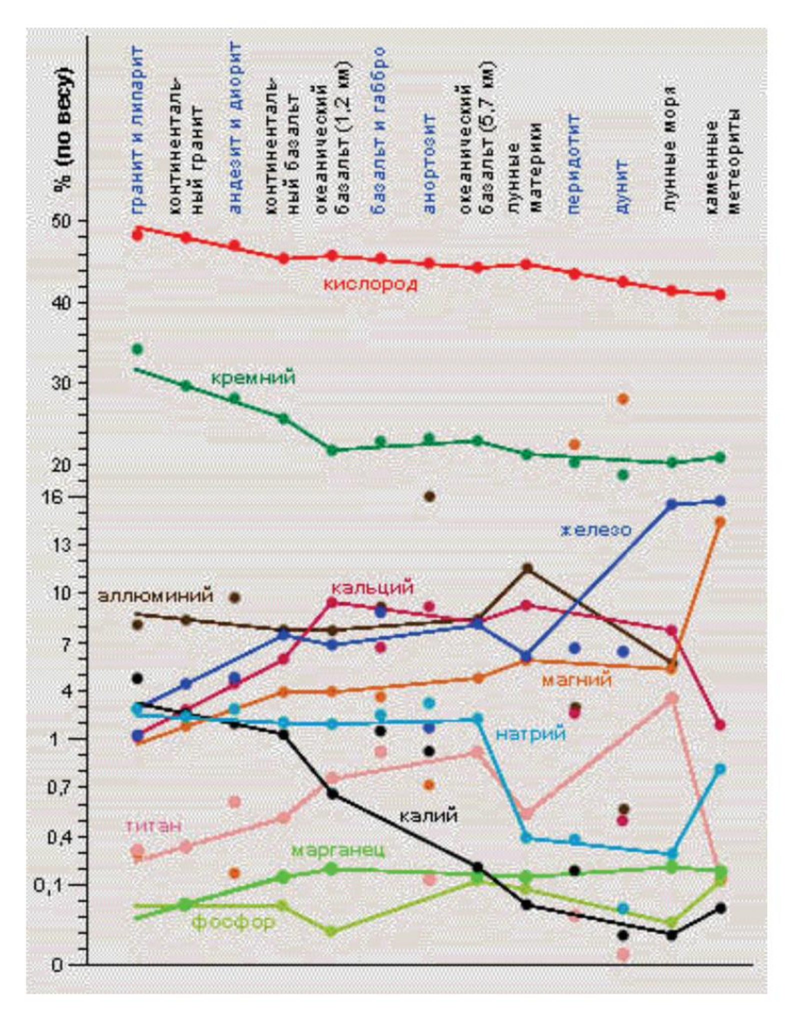
It is known that, starting from the Proterozoic period (approximately the last 2 - 2.5 billion years ago), **the change in the composition of the forming rocks on Earth had a very definite trend:** igneous rocks, instead of acidic (most saturated with alkali metals), gradually began to have a medium, and then the main composition, as if illustrating the chemical result of long-term moderate hydrogen purging of the subsoil.

So: **the rocks of the Moon fit well into this terrestrial trend, as if continuing it.** If continental lunar rocks are close to modern basic basalts of the Earth, then oceanic lunar rocks are ultrabasic. The Moon seems to demonstrate the end of the peaceful scenario of the Earth’s hydrogen evolution.

Now let's turn our attention to our other neighbors in the solar system, but not to the planets, but to **meteorites,** among which the vast majority are the so-called. **stony meteorites.** Their composition turns out to be quite close to the composition of the earth's crust.

But this is what becomes clear upon careful analysis: **according to the content of the main constituent elements, stony meteorites form a single series of changes into which earthly rocks (from the Proterozoic onwards) and lunar rocks can be arranged !!!** (see ***Table*** and ***Fig.*** 41).

Element	Continents		Oceans		Moon rocks		stone meteorites
	granite	basalt	basalt	basalt	mainland	seas	
	16.9 km	21.7 km	1.2 km	5.7 km			
iron	4,37	7,33	6,74	7,92	6,01	15,31	15,50
oxygen	47.70	45,60	45,74	44,22	44,64	41,53	41,00
silicon	29.49	25,63	21,85	23,11	21,57	20,42	21,00
magnesium	1,79	3,84	3,87	4,76	5,81	5,26	14,30
aluminum	8.14	7,56	7,53	8,20	11,27	5,46	1,56
calcium	2,71	5,78	9,18	8,03	9,02	7,57	1,80
sodium	2,11	1,82	1,68	2,02	0,38	0,28	0,80
sulfur	0,064	0,077	0,048	0,058	-	-	1,82
titanium	0,32	0,50	0,74	0,89	0,52	3,23	0,12
potassium	2,40	1,10	0,65	0,20	0,075	0,037	0,07
phosphorus	0.07	0,07	0,04	0,10	0,09	0,05	0,10
manganese	0.074	0,13	0,18	0,14	0,13	0,19	0,16
carbon	0,27	0,12	1,19	-	-	-	0,16



- *Fig. 41* -

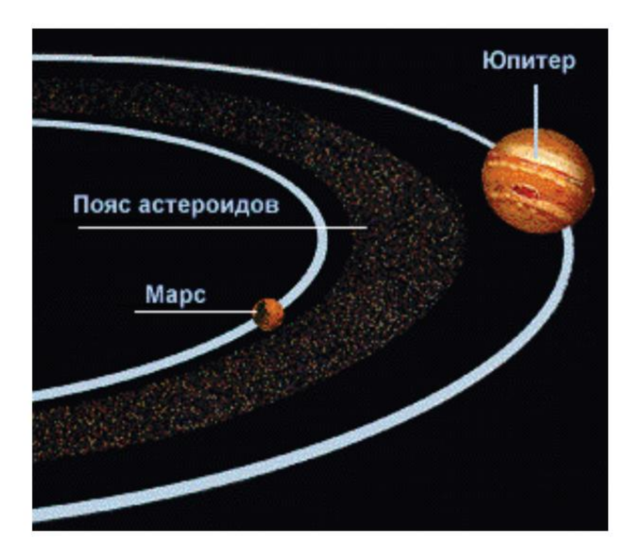
From the table and especially from the figure it is clear that the resulting sequence (granites - andesites - continental basalts of the Earth - oceanic basalts of the Earth - lunar continental basalts - basalts of the lunar seas - stony meteorites) is so strongly traced by its main components that **it can hardly be accidental.** In this sequence, there is a noticeable decrease in the content of oxygen, silicon and potassium and an increase in the concentration of iron, magnesium, titanium, manganese (to a lesser extent calcium).

Several very serious conclusions immediately follow from this. First of all: the obvious increase in the concentration of iron as we move along the series fundamentally contradicts the hypothesis according to which this element gradually, in the evolution of planets, descends to the center of the interior, i.e. to the core. Here we can observe a completely opposite process. Apparently, as a result of hydrogen purging of the subsoil, a certain part of the iron is carried closer to the surface.

But much more important is the conclusion that follows from this series: **the hypothesis that meteorites are remnants of the primary substance from which the solar system was formed is clearly not correct !** After all, stone meteorites (of which the majority) are, rather, **the result of some chemical evolution,** and not its initial conditions, judging by the trend of this evolution on the Earth and the Moon.

Further. In terms of their chemical composition, stony meteorites are quite likely **the result of powerful hydrogen purge** under conditions close to those we have in the Earth's mantle. The logical conclusion from which is **the hypothesis: stone meteorites are fragments of some planet that was part of the Solar System and could not withstand the rapid release of hydrogen from its hydride core at one time.**

One can easily associate this planet with the hypothetical (for now) **Phaeton,** which revolved around the Sun between the orbits of Mars and Jupiter, where the Asteroid Belt is now located - the main supplier of meteorites falling to the Earth (see ***Fig.*** 42).



The hypothesis about the existence of this planet in the distant past is so widely known that, perhaps, there is no point in citing here all the considerations and facts that testify in its favor. We are only adding some arguments to the general collection, proposing a very **specific mechanism for a possible catastrophe...**

Note that **the mythology that** ultimately led us to such conclusions also **contains indications and hints about the existence of an additional planet between the orbits of Mars and Jupiter.** And although its name - Phaeton - was borrowed from ancient Greek mythology, millennia before the heyday of Ancient Greece in another region, among the Sumerians of Mesopotamia, drawings were discovered that are often considered in the form of a stylized image of the solar system with an additional planet.

It is interesting that the other extreme version of the composition of meteorites, namely the composition of the so-called. iron meteorites, also turns out to be on the side of this hypothesis. Iron meteorites contain more than 90% iron, 8.5% nickel and 0.6% cobalt (the concentration of other elements does not exceed 0.1%). If **stone meteorites are fragments of Phaeton from the composition of its mantle,** which underwent a strong hydrogen purge, then **iron meteorites are, apparently, fragments of the core of the same Phaeton.**

It can be seen that the composition of iron meteorites is quite consistent with the possible hydride core of both the Earth and its sister planet Phaethon. Only here we are dealing not with metal hydrides, but with their residues: hydrogen left them either during the expansion of the planet Phaethon (during dehydridization of the core), or (which is even more

probably) - during the explosion of Phaeton. When the pressure on the fragments of the core almost instantly dropped to zero after the explosion, the hydrogen remaining in them inevitably had to very quickly leave the still hot fragments (remember the high temperatures in the bowels of the planet and take into account that the temperature could not drop as quickly as the pressure).

Accepting this hypothesis about the nature of meteorites as fragments of a highly evolved planet, and not as remnants of the primary matter of the solar system, much better explains **the difference in composition between them.** If we assume that stone meteorites are fragments from the mantle of Phaethon, and iron meteorites from its core, then (in addition to the logical picture of the chemical composition) the **predominance of stone meteorites** in their total number becomes obvious: after all, the mantle, for example, of the Earth occupies about 80 % of the volume of the entire planet.

It is also noteworthy that the composition of meteorites in this case gives us the opportunity to better imagine the structure of the modern Earth, which turns out to be not so sharply different from the existing model. Indeed, the correlation of stony meteorites with the Phaethon mantle is in good agreement with the generally accepted scheme of the Earth's silicate-oxide mantle (the predominance of compounds with silicon and oxygen). And if, according to the generally accepted model, the core of our planet is iron, then the chemical composition of iron meteorites is also quite consistent with this. This, however, does not completely contradict the fact that the core can be saturated with hydrogen, and the metals that make it up are not found there in pure form, but in hydride compounds.

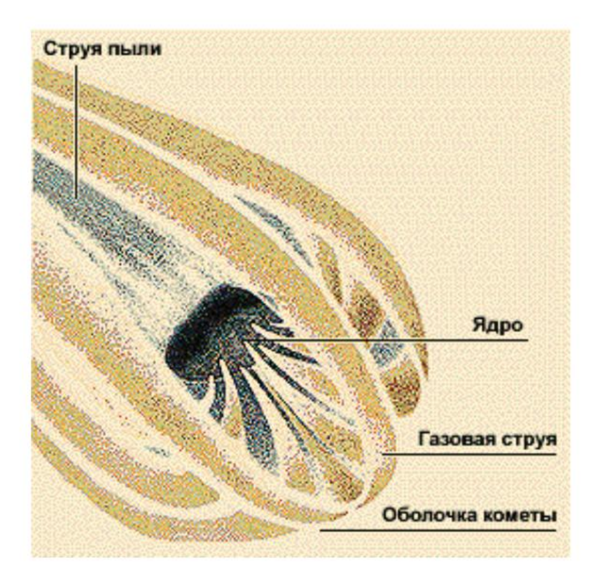
Let us note in passing that the three main elements that make up iron meteorites: iron, nickel and cobalt are **the closest neighbors in the periodic table and have largely similar properties.** Therefore, their proximity in iron meteorites, as the remnants of the hydride core of Phaethon, is not surprising, and for the primary substance of the solar system, such a disproportion of elements is simply not explainable.

It is clear that if the explosion of Phaeton took place, then in open space such small fragments of the planet as asteroids (they are also meteorites when falling to Earth)
Quite quickly they should have lost the bulk of the hydrogen contained in them, which was subsequently blown away from the former orbit of Phaeton by the sun and dissipated in the of surrounding space. That is why we are not aware of any cloud or other accumulation hydrogen in the Asteroid Belt.

Since the fragments from the explosion should have scattered in all directions, and the process of their degassing was not instantaneous and should have taken some time, a number of them could have been thrown to long distances from the Sun into the region of low temperatures, so that a significant part of the hydrogen -water (after all, hydrogen interacted, as we saw, with oxygen) fluid could freeze and not have time to evaporate. Therefore, as another hypothesis, it is quite possible to assume that at least **some of the comets of the Solar System** also represent such **fragments of Phaeton with frozen fluid.**

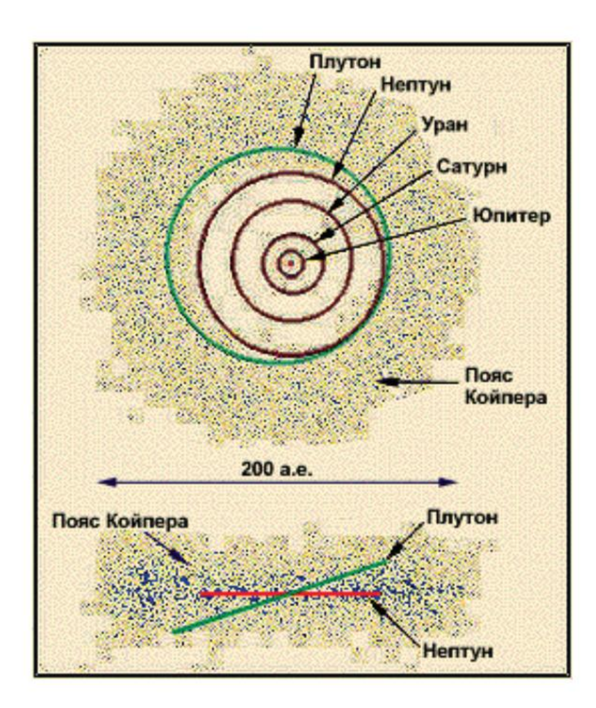
As these fragments approach the Sun in an elongated orbit and are heated by the sun's rays, partial **evaporation** will obviously occur in this case.
such **a hydrogen-water fluid with its release outside the fragment.** In this case, the fluid can pick up small particles of the fragment substance in the form of dust. This mechanism seems quite logical and possible for the formation

gas-dust tail of comets, growing with decreasing distance to the Sun and vice versa (see Fig. 43).



This is also quite consistent with the idea that in the Asteroid Belt, the fragments of Phaethon almost completely lost their hydrogen, since at such a distance from the Sun comets already have noticeable tails, which indicates an active process of degassing the fluid from them.

And if we continue the logical chain, then **a distant cluster of icy bodies** which is the main supplier of short-period comets and which is called **the Kuiper belt,** may also well be **fragments of another planet in the Solar System that could not withstand the hydrogen explosion of its interior** (see ***Fig.*** 44). This planet apparently rotated a little further than the average orbit of Pluto, which could have been its satellite and set off on an independent journey around the Sun after the hydride explosion of the mother planet (which, by the way, may well explain its strange trajectory, even going beyond the orbit of Neptune).



- ***Fig. 44*** -

It is interesting that references to a certain distant planet, also revolving around the Sun, are also found in ancient mythology, although references to it are much more vague than indications of the existence of Phaethon.

So, apparently, in our solar system we can observe both possible alternative options for the future of our planet. At the same time, the example of a catastrophic option, apparently, is not at all unique... In this connection, a certain curiosity arises: will the Earth follow the path of Phaeton?..

It is hardly possible to give an absolutely accurate answer to this question given the current level of our knowledge. Although it is doubtful that the process of a hydrogen explosion (not thermonuclear fusion, but degassing of the subsoil!) could last for hundreds of millions of years. Rather, it still looks like evolution along a peaceful path. Therefore, **the fate of Phaeton is unlikely to await us...**

And one last thing. Unfortunately, we can only guess about the source of the knowledge that is concentrated in ancient myths. However, it is easy to see that their accuracy in some cases is very, very high and is well confirmed by modern scientific knowledge. In the case considered, **mythology can even help science in clarifying knowledge** about our even very distant past.

The method used to transmit information is also particularly noteworthy: with the help of a few simple numbers, a very complex process is illustrated with excellent accuracy. Obviously, this is simply not possible for the primitive mind that we often attribute to our ancient ancestors. **Either you need to reconsider your point of view about the level of development of ancient society, or take seriously the version of a third-party (in relation to this society) source of such knowledge.**

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